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PROCEEDINGS MAJCOM SOLID WASTE MANAGERS WORKSHOP HELD ON 1 - 3 --ETC(U)
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PROCEEDINGS MAJCOM SOLID WASTE MANAGERS WORKSHOP 1 - 3 MARCH 1977

at Tyndall AFB, Fla.

CEEDA

ROBERT F. OLFENBUTTEL, CAPT. USAF

MAY 1977

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Technical memo

CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT ACTIVITY
(AIR FORCE SYSTEMS COMMAND)
TYNDALL AIR FORCE BASE
FLORIDA 32403

410240

PREFACE

This Technical Memorandum was prepared under Job Order 21036W73. It provides proceedings of the MAJCOM Solid Waste Managers Workshop held at Tyndall AFB FL 1-3 Mar 77. The Workshop was co-sponsored by the Directorate of Environics, Air Force Civil Engineering Center and the Environmental Policy Branch, HQ USAF. Under subsequent reorganization of the Civil Engineering Center, the Environics Directorate became Detachment 1 of Headquarters Armament Development and Test Center (ADTC). Subject matter has been arranged to provide a systematic, cogent guide to implementation of recent Environmental Protection Agency solid waste management guidelines. Particular emphasis has been placed on refuse source separation and DoD implementation requirements.

This Technical Memorandum has been reviewed and is approved.

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PARTIAL

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I. OVERVIEW - Major Frank Sanpei, HQ USAF/PREV

A. Workshop Objectives

1. Discuss impact of recent DoD policies.

2. To discuss Air Force implementation of Environmental Protection Agency (EPA) Guidelines.

3. To know Defense Logistics Agency (DLA) responsibilities.

4. To exchange ideas.

B. Air Force Environmental Quality Management by Objectives (MBO) Program

Solid Waste Management is part of the Air Staff and DoD MBO program. Particularly, the objective is to: Ensure timely implementation of applicable Environmental Protection Agency Guidelines for Thermal Processing and Land Disposal, Resource Recovery, Source Separation, Collections, Beverage Containers, and Procurement.

II. Summary of EPA Guidelines - Major Sanpei

A. Summary Statements

1. Some Guidelines require Federal implementation; others strongly recommend implementation.

2. All Mandatory Guidelines have provisions for noncompliance.

3. All Guidelines have reporting requirements.

B. Procurement of Products Guidelines

1. Promulgated 15 Jan 76.

2. The Guidelines are not mandatory, but recommended for implementation at all levels of government.

3. The Guidelines delineate actions that government agencies should take to ascertain that specifications they are responsible for, and the procurement actions they take, will increase the use and associated markets for recycled material.

4. The specification review process action office in DoD is the Defense Material Specification and Standards Office, ODASD (Material Acquisition).

5. The procurement process action office in DoD is ODASD (Procurement).

6. Solid Waste/Refuse Derived Fuel (RDF) is among the specifications under DoD review. The action office is ODASD (I&L).

7. The Air Force is currently waiting for policy formulation in this area.

C. Storage and Collection Guidelines

1. Promulgated 13 Feb 76.

2. The Guidelines are mandatory for Federal agencies. They cover the storage and collection of residential, commercial and institutional solid wastes.

3. Existing Air Force directives are consistent with the Guidelines. Requirements are included in AFM 91-11 and the forthcoming Joint Service Solid Waste Management Pamphlet.

D. Thermal Processing and Landfill Disposal of Solid Wastes

1. Promulgated 14 Aug 74.

2. The Guidelines are mandatory for Federal agencies.

3. Scope:

a. Thermal Processing: The Guidelines delineate minimum levels of performance required of any solid waste thermal processing operation of 50 tons or more per day of municipal type solid waste. They apply only where the Federal agency is able to exercise direct management control over the processing and disposal operation.

b. Land Disposal: The Guidelines delineate minimum levels of performance required of any solid waste land disposal operation. The listed procedures are based on the practice of sanitary landfilling municipal type solid waste. They are designed to ensure that the design, construction, and operation of both existing and future land disposal sites meet the health and environmental standards for the area in which they are located.

4. The requirements are included in AFM 91-11 and the forthcoming Joint Service Solid Waste Management Pamphlet.

5. A 1976 EPA Compliance Survey of Air Force landfills indicates that a significant number of landfills may have compliance problems. Follow-up actions are required by the MAJCOMs (see Appendix I).

6. MAJCOMs have also been notified of a Government Accounting Office (GAO) report on installation landfills and of compliance requirements associated therewith.

E. Beverage Container Guidelines (Appendix II)

1. Promulgated 21 Sep 76.

2. The Guidelines are mandatory, but DoD is conducting a one (1) year feasibility study on 10 military installations before deciding how and where implementation will occur. The schedule for the test includes start up on Patrick AFB FL (May 77), Malmstrom AFB MT (Jun 77) and Laughlin AFB TX (Jun 77).

3. The Guidelines are intended to reduce beverage container solid waste and litter, and thereby reduce waste management costs and conserve energy and material resources.

4. Where implemented, all beverages sold on Air Force facilities must be in returnable containers. A minimum deposit of five cents per container is recommended, although each Air Force installation will be able to use a higher or lower deposit that is compatible with local deposit systems, whenever they exist.

5. Interface coordination between AFRCEs and MAJCOMs will be necessary and will have to be developed.

F. Source Separation Guidelines (Appendix III)

1. Promulgated 23 Apr 76.

2. The Guidelines are mandatory for Federal activities. They cover source separation of residential, commercial and institutional solid wastes.

a. All installations with over 100 office workers will recover high-grade paper and sell for the purpose of recycling. Those installations with less than 100 office workers are encouraged to implement such recovery.

b. All installations with more than 500 families residing thereon shall recover used newspapers and sell for the purpose of recycling. Those installations with less than 500 families are encouraged to implement such recovery.

c. All installations generating 10 or more tons of waste corrugated containers per month shall collect and sell this material for the purpose of recycling. For Air Force installations this generation pertains to Exchanges and Clubs. Cardboard from Appropriated Fund activities will continue to be managed through Defense Property Disposal Office (DPDO) channels, as governed by Vol VI, AFM 67-1 and DoD 4160.21-M.

3. Reasons for noncompliance:

a. Lack of markets, or

b. Program not self-sustaining.

4. Air Force Schedule:

Mar 1-3	MAJCOM Solid Waste Workshop
Mar 31	AF/PRE policy letters directing implementation
Mar-May	MAJCOM policy letters & info program (Command Workshops)
May 15	Installations implement accounting procedures
July 29	Installations provide DPDOs with estimated quantities
Aug 30	Installations complete analyses (quantities, plan, costs, proceeds, decision)
Sep 30	MAJCOMs complete review of installations' analyses
Sep 30	MAJCOMs submit results of Command implementation

G. Resource Recovery Guidelines (Appendix IV)

1. Promulgated 21 Sep 76.

2. Scope:

a. A DoD facility (an Air Force installation is a facility!) that generates 100 tons or more per day of residential, commercial and institutional solid waste, after complying with waste reduction (beverage container recycling) and source separation policies, shall establish and/or utilize resource recovery facilities to separate and recover materials or energy, or both, from solid waste.

b. DoD facilities located within a Standard Metropolitan Statistical Area (SMSA) are required to participate with other DoD Components and Federal facilities in the establishment and/or utilization of a single resource recovery facility if: (1) any one Federal facility generates 50 tons or more of residential, commercial, and institutional solid waste per day after complying with waste reduction and source separation policies; and (2) the combined total of this solid waste for all Federal facilities within the SMSA is 100 tons per day. The Federal Agency having jurisdiction over a Federal facility that generates the largest quantity of residential, commercial and institutional solid waste in the SMSA will be designated the lead agency in the planning, programming and budgeting for the resources recovery facility in accordance with EPA Guidelines. (EPA is presently determining which Air Force installations are located in an SMSA and qualify for implementation.)

3. Air Force lead agency responsibility: San Antonio TX SMSA. Installations are Kelly AFB, Lackland AFB, Randolph AFB, Brooks AFB and Ft Sam Houston. The Central Region Civil Engineer (AFRCE) will have initial "lead" organization's responsibility.

4. Reasons for noncompliance:

a. Lack of markets, or

b. Economically impractical.

H. 1976 "Solid Waste Act" Amendments

1. Officially called Resource Conservation and Recovery Act of 1976. The following summary was put together by Capt Alan Ernst, JA, AFCEC.

2. Historical perspective.

a. Part of environmentalists legislative program since 1971.

b. "Surprise" enactment. Built on some existing regulatory structure (40 CFR 240).

c. Federal guidelines for state control.

3. Findings and objectives

a. Rising tide of scrap, discarded, and waste materials.

b. Collection and disposal of solid wastes is primarily a state, local, and regional function. Fed. to provide financial and technical assistance and leadership in development, demonstration and application of new disposal methods.

c. Future open dumping on land prohibited. Existing open dumps to be converted and phased out.

d. Treatment, storage, transportation, and disposal of hazardous wastes to be regulated by state or EPA under EPA guidelines.

e. EPA guidelines for non-hazardous solid waste collection, transport, separation, recovery and disposal practices and systems.

f. Cooperative effort between Fed., state, local governments, and private industry to recover valuable materials and energy from solid wastes.

4. Definitions

a. Disposal -- broadly defined to include discharge, deposit, injection, dumping, spilling, leaking, or placing solid waste such that it may enter the air or be discharged into any waters (including ground waters).

b. Hazardous waste -- poses special human health hazards.

c. Solid waste -- broadly defined to include any garbage, refuse, sludge, or discarded material (solid, liquid, semi-solid, gaseous form). Does not include domestic sewage sludge.

d. Sanitary landfill -- to be defined by EPA. No reasonable probability of adverse effects on health or environment from disposal of solid waste at the facility.

e. Open dump -- disposal facility or site which is not a sanitary landfill.

f. Resource conservation -- the reduction of the amounts of solid waste that are generated, reduction of overall resource consumption, utilization of recovered resources.

g. Solid waste management -- systematic collection, source separation, transportation, transfer, processing, treatment, disposal of solid waste.

5. EPA Solid Waste Management Information Guideline to be published (Office of Solid Waste)

Practices, levels of performance, minimum criteria.

6. Hazardous Waste Management (keystone of whole act)

a. EPA must (1) establish criteria for identifying hazardous wastes; (2) identify characteristics of hazardous wastes; (3) list particular hazardous waste to be regulated.

b. EPA must set standard for generation, transport, treatment, storage, and disposal of hazardous waste ("cradle to grave" records).

c. Permit system to be established. States hopefully will take over program if (1) equivalent to federal program; (2) consistent with federal program; and (3) provision for adequate enforcement.

d. Anyone handling a hazardous waste must notify EPA within 90 days of listing of the hazardous waste or its characteristics.

7. Management of non-hazardous solid waste

a. Goal - develop and encourage environmentally sound disposal methods; maximum utilization of resources; encourage resource conservation.

b. EPA to identify areas which have common solid waste management problems and which are appropriate units for planning regional solid waste management services. May include military installations. Based on (1) size and location of area; (2) volume of solid waste; (3) available means to coordinate planning. Target date Apr 77.

c. EPA to publish guidelines for state plans. State plan to be approved must (1) identify responsibilities and areas within state; (2) prohibit new open dumps; (3) provide for phasing out open dumps in five years; (4) other requirements. Target date Apr 78.

d. EPA to inventory <u>all</u> open dumps in U.S. Target date Oct 77.

e. Fed. cannot force states to adopt plan (not like Clean Air Act). Regulation not feasible unless state takes over plan. Only open dumps are prohibited. Federal government can only regulate hazardous waste.

8. Specifications for secondary materials

SecCom to publish guidelines for the development of specifications for classification of recovered materials and identify and promote markets for recovered materials.

9. Application of laws to Federal facilities

> Sec 6001: Each department, agency, and instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any solid waste management facility or disposal site, or (2) engaged in any activity resulting, or which may result, in the disposal of solid waste or hazardous waste shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injunctive relief), respecting control and abatement of solid waste or hazardous waste disposal in the same manner, and to the same extent, as any person is subject to such requirements, including the payment of reasonable service charges. Neither the United States, nor any agent, employee, or officer thereof, shall be immune or exempt from any process or sanction of any State or Federal court with respect to the enforcement of any such

injunctive relief. The President may exempt any solid waste management facility of any department, agency, or instrumentality in the executive branch from compliance with such a requirement if he determines it to be in the paramount interest of the United States to do so. No such exemption shall be granted due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation. Any exemption shall be for a period not in excess of one year, but additional exemptions may be granted for periods not to exceed one year upon the President's making a new determination. The President shall report each January to the Congress all exemptions from the requirements of this section granted during the preceding calendar year, together with his reason for granting each such exemption.

This provision is not tied to an approved state plan.

10. Research, development, demonstration projects

11. Miscellaneous observations

a. No quantifiable objective as in FWPCA (zero discharge) or in CAA regulations (primary and secondary ambient air quality standards).

b. Existing EPA guidelines in 40 CFR 240 still apply to federal facilities. Guidelines cover: (1) Thermal Processing of Solid Wastes; (2) Land Disposal of Solid Wastes; (3) Solid Waste Storage and Collection; (4) Beverage Containers; (5) Resource Recovery Facilities; and (6) Source Separation.

c. Hazardous wastes will be defined in terms of: (1) flammability; (2) reactivity; (3) corrosivity; (4) oxidizing agents; (4) etiological (causal) agents; (5) toxicity; (6) biomagnification; (7) persistence in the environment.

d. The Act requires and EPA has stated that it intends to develop regulations in a "fishbowl" atmosphere with maximum public participation and awareness. AF personnel testifying or appearing before EPA or any state or local agency must have prior approval in accordance with AFR 110-5.

III. DoD Directive 4165.60 and its Implementation - Major Sanpei

A. General: Reference Appendix V. A general discussion was conducted on the Directive. Specific areas of concern are addressed in follow-on sections of these Proceedings. In paragraph B the final Implementation directions are reproduced as they were promulgated by HQ USAF/PRE to all MAJCOMs on 31 Mar 77.

B. Implementation of DoD Directive 4165.60, Solid Waste Management

1. PURPOSE: To provide installation trash and waste recycling (TWR) program managers with guidance which will allow the implementation of DOD Directive 4165.60, October 4, 1976, Solid Waste Management - Collection, Disposal, Resource Recovery and Recycling Program.

2. BACKGROUND: This Directive implements U.S. Environmental Protection Agency's Solid Waste guidelines on Source Separation and Resource Recovery Facilities. The Directive establishes the following changes to existing policies:

a. Net proceeds from the sale of solid waste materials (as defined by the Directive), including high grade paper such as computer printout paper and cards, shall be deposited to the appropriation which bore the original TWR expenses.

b. The above proceeds will be used first to reimburse expenses incurred in operating the resource recovery program and then to finance special projects up to $50,000 per installation per fiscal year for environmental improvement and energy conservation.

c. Exceptions prescribed by this letter may be made after appropriate analysis has determined that markets for recovered products are not available or that TWR expenses exceed proceeds of sales.

d. AF installations implementing the TWR program must comply with mandatory requirements of the EPA guidelines (outlined in paragraph 4). However, Air Force policy is to implement the provisions only if economic analysis shows source separation or resource recovery to be cost effective.

3. DEFINITION

a. Trash and Waste Recycling (TWR) Program. A program which removes specific solid and other waste materials from waste disposal channels and results in their reuse or conversion for another use including energy. These specific solid and other waste materials are consumer waste materials, comprised of solids or liquids, or mixtures thereof, including waste paper, textiles, plastics, garbage, metal and glass containers and similar items which are generated as municipal type trash and waste on Defense installations by activities such as family housing, dormitories, and administrative offices. All other recoverable waste material which is generated on the installation is governed by Vol. VI, AFM 67-1 and DOD 4160.21-M, the Defense Property Disposal Manual and is prohibited from inclusion in TWR program. Examples of materials excluded from the TWR program are cardboard and food waste from the commissary; food waste and refuse from dining halls and messes; and trash and waste from Non-Appropriated Fund (NAF) activities.

b. TWR Expenses: These are in-house costs incurred for (1) pick up and transport of materials for sale through the DPDO which have been separated at the source of generation, e.g., newspapers at the curb in a family housing area, aluminum cans at the dormitories; (2) separating aluminum cans from bi-metal cans; (3) transportation of separated materials to DPDO; and (4) purchase of any equipment for operation of the TWR program. Specifically, these expenses include:

(1) The acquisition of replacement equipment for recycling purposes. The provisions of DOD Instruction 4160.1 apply in the financing of replacement equipment.

(2) The acquisition and identification of containers and container stands for proper segregation of solid waste material.

(3) The collection of waste materials from the containers.

(4) The separating, baling, compacting, shredding, pulping, or otherwise altering the size, shape or form of the waste materials.

(5) The transfer of marketable items to the accountability of the property disposal office. Transfer of physical custody is not required; such property shall be moved only when it is most economical and effective to do so.

(6) The installation-level administration and support of the above functions by the managing activity.

c. TWR Sale Proceeds. Proceeds are receipts from sales of TWR materials by the DPDO. Because no other person or agency is authorized to sell these materials, there should be no other source of income. Proceeds from sale of materials from commissaries, NAF activities, etc., are not to be included in TWR sale proceeds. Net proceeds derived from commissary and NAF activities waste generation are returned to them by the AFO.

d. Use of Proceeds. Proceeds must first be used to reimburse the TWR program expenses. Remaining proceeds are to be used to finance special projects for environmental improvement and energy conservation. The amount of such financing for such projects shall not exceed $50,000 per installation per fiscal year.

4. EPA GUIDELINES REQUIREMENTS:

a. Source Separation

(1) High grade paper generated in office facilities of over 100 workers shall be separated at the source of generation and collected for the purpose of recycling.

(2) The separation of used newspapers at the source or residential generation, in conjunction with separate collections, shall be carried out at all DOD installations in which more than 500 families reside. The newspaper shall be recycled or, alternatively, used as an energy resource.

(3) Any installation generating 10 or more tons of waste corrugated containers per month shall segregate and separately collect for purposes of recycling, or alternately, used as an energy resource.

b. Resource Recovery

(1) A DOD facility that generates 100 tons or more per day of residential, commercial and institutional solid waste, after complying with waste reduction and source separation policies, shall establish and/or utilize resource recovery facilities to separate and recover materials or energy, or both, from solid waste.

(2) DOD facilities located within a Standard Metropolitan Statistical Area (SMSA) are required to participate with other DOD Components and Federal facilities in the establishment and/or utilization of a single resource recovery facility if: (1) any one Federal facility generates 50 tons or more of residential, commercial, and institutional solid waste per day after complying with waste reduction and source separation policies; and (2) the combined total of this solid waste for all Federal facilities within the SMSA is 100 tons per day. The Federal Agency having jurisdiction over a Federal facility that generates the largest quantity of residential, commercial and institutional solid waste in the SMSA will be designated the lead agency in the planning, programming and budgeting for the resources recovery facility in accordance with EPA Guidelines. (EPA is presently determining which Air Force installations are located in an SMSA and qualify for implementation).

5. REPORTING REQUIREMENTS:

a. RCS DD-I&L(A&AR) 1435

(1) Source separation guidelines - MAJCOMS will report on the status of their implementation actions of the source separation guidelines. Report will consist of an installation by installation summary of actions taken. Where it is determined not to implement the mandatory requirements, a complete analysis and rationale used by the installation will be included in the report. The required analysis shall be conducted every three years and reported. (Reporting format will be forwarded later.)

(2) Resource Recovery Guidelines - Within one year (21 September 77), MAJCOMS will report on the status of their implementation actions of the resource recovery guidelines. (Further instructions will be forwarded later.)

b. RCS DD-I&L(A) 1436 - This report will be required annually on the proceeds received from sales of the recovered materials. The report will also include expenses incurred in this program, the number and costs of projects for environmental improvement and energy conservation, and any remaining proceeds. (Reporting format is attachment 1.)

6. FINANCIAL PROCEDURES:

a. Budgeting

(1) Each operating agency will budget for the TWR program as a part of its reimbursable program. The reimbursement budgeted should be sufficient to fund TWR proceeds including those in excess of the TWR program expenses (i.e., free assets) which are returned to the operating agency. Proceeds which exceed the $50,000 limit should be excluded from the reimbursement budget.

(2) TWR expenses in excess of proceeds must be funded from within available direct funding authority. Sustained requirement for direct funds forms a basis for requesting an exception to mandatory participation in the TWR program.

b. Accounting (AFO):

(1) General.

(a) These procedures are to be used by installations with a TWR program. They are amplified to show the program's correlation to other resource recovery programs.

(b) Recoverable waste materials are collected by various base organizations and transferred to the Defense Property Disposal Office (DPDO) for sale of marketable items. These base organizations include Non-Appropriated Fund activities, commissary store, and organizations financed by general funds (e.g., military family housing, etc.).

(c) In any instance where the Base Civil Engineering (BCE) activity is collecting, segregating and transporting any waste material to the DPDO, the BCE provides the data necessary to allow the DPDO to maintain accountability of the material collected by providing the breakdown of waste contributed by AF activities to the DPDO. The BCE may also provide such information to the AFO as required.

(d) TWR program expenses are to be accounted for in accordance with paragraph 6c and budgeted in accordance with the procedures in paragraph 6a.

(2) Disposition of Proceeds.

(a) The DPDO deposits all funds received from the sale of any waste material with its supporting AFO. These funds are identified by

the amounts to be deposited, i.e., to 97F3860.5191, "Proceeds from Sale of Scrap, Salvage or Surplus Material, Defense Supply Agency", and to accounts for AF base activities such as commissary, certain non-appropriated fund activities, general fund, and other military activities.

(b) The AFO receives the funds from the DPDO and makes the following distribution to the deposit fund accounts or revolving trust fund account based upon the percent of material contributed by base organizations after the deduction of the DPDO sales and handling commission expenses:

1. To account 97F3860.5191 for the amount specified by the DPDO for defense property disposal sales expense. This amount is for the DPDO commission and is normally 20% of the sale proceeds.

2. 57X8420 for amounts applicable to commissary store operations. (This is not part of the TWR program and proceeds do not offset TWR expenses.)

3. 57X6875 for amounts applicable to non-appropriated funds activities (NAF). The AFO writes a check to the Non-Appropriated Funds Fiscal Management Office (NAFFMO) program and proceeds do not offset TWR expenses.

4. 57F3875 for amounts applicable to other military installations. The AFO subsequently issues a check with supporting documentation to the installations of servicing AFO which have been identified by the DPPO. (This is not part of the TWR program and proceeds do not offset TWR expenses.)

5. To the local operating appropriation for amounts applicable to general funds to reimburse remaining TWR program expenses and to provide for environmental improvement and energy conservation projects which are limited to $50,000 per installation per fiscal year.

6. For remaining TWR program reimbursements, deposit to Budget Clearing Account 97-F3860.5191, "Proceeds for sale of scrap, salvage or surplus materials, Defense Supply Agency."

(3) Reporting Expenses.

(a) Base Civil Engineering will establish a work order to collect expenses associated with the TWR program in accordance with paragraph 6c below.

(b) These costs will appear on the schedule of reimbursements and refunds (PCN N200451)

c. Base Civil Engineering.

(1) Accounting for all in-house Civil Engineering costs in the TWR program (as defined in paragraph 3c) will be accomplished by a separate AF 327 (Work Order) with the following data elements:

(a) Work Order Indicator - W.

(b) Reimbursement Indicator - Y

(c) Work Center - 494

(d) EEIC - 53330

(e) Cost Account Code - 42000

These costs do not include any costs for collecting, processing, or handling materials which are prohibited from inclusion in the program.

(2) The above expense will appear on the monthly Report of Reimbursements and Refunds, PCN: N200451, to be processed monthly by Accounting and Finance.

(3) Although accounting of the sale proceeds will be accomplished through the AFO, the TWR program manager must be fully aware of his program's financial position and maintain a status of the program using the attachment 1 format.

7. FINANCING ENVIRONMENTAL IMPROVEMENT AND ENERGY CONSERVATION PROJECTS:

a. Proceeds remaining after reimbursing expenses incurred in operating the resource recovery program are authorized for use on special projects up to $50,000 per installation per fiscal year for environmental improvement and energy conservation.

b. The Base Environmental Protection Coordinator will submit to the Base Environmental Protection Committee a recommended list of projects. The Base Environmental Protection Committee will determine the projects to be funded with available proceeds subject to the approval of the Base Commander.

c. Environmental improvement and energy conservation projects should benefit the entire base and should be used to motivate additional interest in the base's resource recovery program.

1 Atch
Sample Format

SAMPLE FORMAT

RCS: DD-I&L(A) 1436 DATE SUBMITTED:
INSTALLATION:
MAJOR AIR COMMAND:

REPORT OF PROCEEDS AND EXPENSES FOR
SALES UNDER THE TRASH AND WASTE RECYCLING PROGRAM

CUMULATIVE
FISCAL YEAR

1. Proceeds deposited by AFO;

   a. Local Operating Appropriation

   b. 97F3860.519., DPDO

2. Recycling Expenses:

   (From BEAMS Reimb/Refund Listing)

3. Listing of Environmental Improvement and Energy Conservation Projects:

PROJECT	COST
a.	
b.	
c.	

IV. Discussions Relating to Air Force Implementation

Following are edited comments, organized by subject matter, made during the workshop. Unless otherwise indicated, they represent amplifying guidance provided by Major Sanpei in response to questions posed by workshop participants.

A. Policy: DoD 4165.60 doesn't tell you at what point the recycling program becomes impractical. Air Force policy: the program should be self-sustaining. However, any Command or any base can support a non-self-sustaining program if they wish to direct fund it.

B. Creativity Needed for Implementation. It is important for individuals at the bases to take a very positive approach and to use good judgment in planning the recycling program and performing the associated economic analyses. Without creativity and good judgment, bases can easily price themselves out the market by requiring capital intensive equipment in the program that, more likely than not, really is not needed. You may want "full service" contracts, which is fine, but you have to consider what reduction that will have on your proceeds.

Planners have to investigate various ways the program can be operated, determining costs for separation, gathering and collection, and compare alternatives against prices and proceeds. Realistically, some bases will not be able to achieve a break-even point, particularly those installations whose geographical locations tend to "isolate" them from available markets. But you've got to remember that the EPA guidelines require that every single installation determine whether you're going to implement or not implement, and if you decide not to implement, then you've got to show reasons why you've made that decision. And, every three years you are required to update that economic analysis to show whether conditions still disfavor recycling.

C. Role of the DPDO (see also paragraphs V E, V P and VI B2)

We keep talking about DPDO -- we keep wanting to throw the thing onto someone else. And everyone's been trying to do that. When the original draft came out on DoD 4165.60, it gave the whole thing to DPDO. The four services, including the Deputy Assistant Secretary of Defense, agreed that we ought to have DPDO assume the entire responsibility. They became the "cash and trash" men for us. Accordingly, the original version of DoD 4165.60 contained two critically assessed provisions: (1) DPDO was given the overall responsibility, and (2) installations should receive back 80% of the proceeds from the computer cards and the whole program.

Well, subsequently the people from the Defense Logistics Agency (DLA) and the military services met with the Deputy Assistant Secretary of Defense and reached agreement with all concerned that we could not

expect DPDO to become the overall manager of the "cash and trash" program. The basic problem was a misunderstanding by the military services of DLA's overall program and how the proceeds were being used. For example, most base installations feel that DPDO will take everything from you that has a value, and anything else they'll throw back at you. The money then seems to stay in DLA. Well, that's not true. The money comes back to the Treasury and eventually branches out and goes to the services again. The real problem is that it does not directly reach the installations that originally provided the materials.

With this in mind, we conceded the DLA/DPDO arguments against their assuming responsibility for collection, disposal and resource recovery. However, the proceeds portion stayed in DoD 4165.60: we agreed that we need the monetary incentive; we need that motivation for our people to get into the program. We need the proceeds, so at least we can show that they will be on a self-sustaining basis.

D. Entitlement to Proceeds. Computer tab cards and computer paper, which may already be recovered, represent proceeds that the installations are entitled to. As DoD Directive 4165.60 points out, it does not matter whether the proceeds derive from papers recovered from data processing or office areas: The funds don't go to the individual organizations. They will go back to the installation, the managing activity, which we've defined as the installation or base that's generating the source separated materials. It won't be put into a central fund where the major command will handle it. Originally, that was the intent, to try to get it in a collective central fund like the forestry program and the other programs we've got where they put it all together and then, yearly, individual Commands have to request the use of the funds. We're not in that same kind of a situation; we'd like to keep the motivation at the installation because they're the ones that are doing the source separation - they're the ones who should and will be getting the proceeds.

E. Installation Use of Proceeds. I direct you to DoD 4165.60 which tells you how those proceeds can be used. The first thing you're going to use it for is to reimburse your program expenses. After you've reimbursed your program, if there are any proceeds remaining you can use those proceeds for environmental enhancement or energy conservation programs. Now what does that mean? It means pretty much that you can beautify your base, you can build parks, you can build bus stops, picnic areas, or whatever else the Base Commander would be interested in. Again, the intent is to encourage and to motivate the source separation program.

F. How to Determine Use of Proceeds at Installation Level. Guidance is presently limited in this area. Each Command and installation will have to determine how and for what the after-expense funds can be used. I recommend that the Base Commander utilize the base Environmental Protection Committee (EPC) to survey needs and make recommendations. They should be encouraged to do things that are for the whole base, that

are attention-getting and help publicize the program.

I've also been given the recommendation that the decision-making apparatus be patterned after the nonappropriated funds committee that considers expenditures and makes recommendations to the Base Commander.

G. First Step for the Installations - Establish Account. The first thing installations are going to have to do is establish a reimbursable funds account. The accounting procedure that is thus established is in the same accounting system that they already have in existence. Once the account is established, it gives the base the authority to receive computer card and paper proceeds! Until this is done, those proceeds will continue to be put into DLA's account.

H. How Can the Bases Effectively Use Computer Card and Paper Proceeds This Year (Once the Reimbursable Account is Established)? We already have money going into the DPDO. With no effort on our part, bases can take those dollars and put them into their own account. What that amount will be is unknown and should be investigated by the bases. Since that money was not budgeted for in the beginning of the fiscal year, the bases will have to go to their MAJCOMs and get additional authority for increasing their reimbursable account. The MAJCOMs have enough flexibility to do that. Without real expenses, these proceeds amount to a gift, which the bases can use for some purpose(s) within the guidelines of the program!

I. Second Step for the Installations - Budgeting. For the next fiscal year the base will have to budget for the trash and waste recycling (TWR) program as part of its reimbursable program. The reimbursement budget should be sufficient to fund TWR proceeds, including those in excess of program expenses, up to $50,000.

J. Example/Illustration of How Budgeting Works. You prepare your economic analysis. You estimate that expenses for equipment, containers, etc., are going to cost $400 for the source separation program. You also estimate that total proceeds will amount to around $500.

You would then budget in your reimbursable account $500 in addition to what's already in there. That will then give you the authority to spend money on this program. As the proceeds come back in, you'll be reimbursing that account. After you reimburse your $400, you have authority to spend an additional $100 for environmental improvement or energy conservation programs.

K. What Happens if Proceeds Exceed Budgeted Funds? If a base budgets $1000 to cover expenses and profits, but makes $2,000, they have to go to their MAJCOM for authority to spend that additional $1,000. They do not have the local authority to spend more than they have budgeted for.

L. What Happens if After-expense Funds are not Obligated by the End of the Fiscal Year? The base loses it! Funds cannot be carried over from one year to the next. Work the programs out so that, if at all possible, proceeds are not received at the very end of the year and are thereby nonspendable. In effect, you don't want to end up with money at the end of the year!

M. What Happens if Proceeds Do Not Cover Expenses? TWR expenses in excess of proceeds must be funded from within available direct funding authority. Sustained requirement for direct funds forms a basis for requesting an exception to mandatory participation in the source separation program.

It is essential that the base Civil Engineering funds manager stay "on top of" the situation to insure that any direct funding needs are identified/predicted well in advance and that direct funds are available to fulfill TWR obligations.

N. Is There A Dollar Limit to Equipment Purchased in Support of the TWR Program? Normally, existing equipment will be used in establishing the recycling program. New/additional equipment will be procured through the appropriations (i.e., direct funds) normally available for equipment acquisition.

However, if the base believes after-expense funds will cover the cost of a new piece of equipment (such as a baler) and can be obligated before the next fiscal year, then purchase can be made from TWR proceeds. Remember that funds cannot be carried over from one year to the next, which means that there is no possibility of combining proceeds from more than one year to cover large capital investments!

Keep in mind, also, that the intent of the source separation program is to recover materials and dollars with minimum capital investment.

O. Use of Proceeds in MFH Area.

General: The definition of "environmental improvement and energy conservation" hasn't been clarified yet. However, an installation cannot take the proceeds (after expenses) and try to improve the family housing quarters. Improvements have to come out of family housing funds.

Hypothetical Situation: Suppose we want to do an energy-saving project in the family housing area. We submit a Work Request and the costs are expensed against the MFH cost account, even though they are reimbursed out of TWR account instead of direct funds.

Question: What effect would this have on the allowance of per MFH unit expenditure?

Response: (Maj Sanpei) I would discourage a project like that because you are using a base (including MFH) source separation program to subsidize a family housing O&M program, which is really not the intent. The MFH O&M program is established to handle projects such as this. In fact we also have an energy conservation program where you can get dollars if you can show savings in that program.

If, for some reason, you can't or don't want to use the energy conservation program, and the proposed project is economical over the long term, I can't see why that project cannot be sold on its merit alone! The funds available from the resource recovery program will most likely be limited and better used for other things that normally are not funded.

P. Does TWR Extend to Oils and Greases and Money Received from Those Items? No.

Q. Does TWR Extend to Materials Recovered in Industrial Areas? No.

R. Does TWR Extend to Nonappropriated Fund Activities? No. (Although those activities may wish to include themselves in the DLA/DPDO contract; in those cases, proceeds from the sale of their recovered materials go directly back to them, not to the TWR account. Editor's note)

S. Will the Financial Procedures Work? The HQ USAF budgeting and accounting and finance people say the system will work as specified in the Implementation Guidance. When it gets down to the installation your people and yourselves (MAJCOMs) are going to have to look it over carefully, screen it and see if you can work with it. Base level coordination will have to include base Civil Engineering, the Comptroller and Accounting and Finance and the DPDO, since he'll be providing the funds.

If it doesn't work, notify me. (HQ USAF/PREVX)

T. Understand Frustrations of Past Installation Efforts. It is important that we understand those frustrations which I think the installations have been faced with. The resource recovery program we know has been a losing proposition, because of the lack of incentives, etc: all of the programs, when we started out, had great expectations. Carswell had a great program, or Vandenberg had a great program, Kelly had a great program, - but when you started looking into it, you found out that they were all losing money and eventually, they were getting to the point where in the opinion of Gen Wright, we couldn't continue that kind of losing operation. And, unless we can show that we can break even, we're not going to continue our programs unless Commands want to direct-fund them.

U. Discussion of Contractor vs. In-house Source Separation Collection.

Comment: I think there is a mistaken idea around here that the Air Force Civil Engineer can move paper around the base cheaper than a contractor, and I contend that that is wrong. The contractor comes in - he's got the right equipment, or he would not have bid on the job. We've still got people running around with single trucks, picking up single dumpsters, driving them 40 miles across base - that may be a little bit of exaggeration - at any rate, my consideration is that in most cases, it's going to be cheaper to do it by contract if you actually cost out all of your equipment, your manhours, everything that you're talking about spending in-house. The fact is that our accounting system lets us lie to ourselves somewhat, and we show that it is cheaper to do it in-house. Therefore, we end up doing it in-house, we end up keeping the junk that we've got running around the base, and if you really took a close look at it, I think you'd find out that the cheapest way for the Government is to have some contractor pick it up right where it was generated or close to it. I think we could handle it within a building with the custodial services we have or the people that were doing the work, but after that point, you have to look real closely because it's going to be expensive to do it in-house and you'll be pricing yourself out of the market; if you can't do it by contract without pricing yourself out of the market, you've already priced yourself out of the market anyway!

Response: (Major Sanpei) Well, I agree with everything you said. The only point is, when you make the analysis, you have to look into these options; you may have the ability and the resources to collect it with very little effort. There may already be existing in-house resources that may be used without having to go out and contract for additional help. What I'm saying is that these are options that are open to you in your economic analysis, but bear in mind that the individual who prepares the economic analysis has got to be aware of it, and it should be the kind of an individual that is trying to see what we can do to get really into the program! But as we said before, we may find that at the majority of our bases, this just won't be feasible, and we'll narrow it down to maybe a handful of bases at which, at this time, it will be self-sustaining.

V. Discussion of Mixed Paper vs. Hi-Grade Recovery.

Comment: The times that I've looked into it, I've found that there are markets for mixed paper that are not that much lower than the high quality paper. Therefore, given the segregation problems, and handling problems, and being able to get that much more out of the waste going into the landfill might make mixed paper recovery attractive; so if you're going to get prices, I suggest that you not overlook the mixed paper market!

Responses:

Maj Sanpei - That is definitely a possibility. It will depend upon the geographical marketing region you're in. The prices for mixed paper are usually considerably lower than for segregated, hi-quality paper. If you don't ask the DPDO for a price on mixed paper, they will only address the hi-quality paper. But alot of this is going to have to be done at the installation level and it's up to all of you to let those people know what their possible alternatives are, and to give them the best possible guidance that you gain from this workshop and future Air Force directions.

Mr Howard - EPA's experience has been that a 3% increase in mixed paper led to a 90% decrease in value!

Lt Col Pyne - In Mid 1976 DLA was receiving $165-220/ton for computer tab cards. When mixed with low grades of paper, the price dropped to $5-20/ton. Thus, approximately $200/ton was lost when paper grades were mixed, which reinforces EPA's findings.

Company Representative of SHADE - If a paper plant is set up to handle mixed paper, it is highly probable that an installation would not receive higher prices for its recycled paper if it proposed separating out the high grade from the mixed paper.

V. Defense Logistics Agency (DLA) - Lt Col W. Pyne

Following are edited comments, organized by subject matter, made by Col Pyne during the workshop. They represent guidance to clarify the role that DLA and its organizational components (e.g., DPDO's) will play in source separation and resource recovery.

A. Organizational Structure

1. DLA in Washington DC manages marketing and sales policy for DoD disposal.

2. The Defense Property Disposal Service (DPDS) in Battle Creek MI manages the operational end of the DoD disposal function.

3. Contracts are effected only through Defense Property Disposal Regions (DPDR). DPDRs and their commanders are: (1) Ogden UT (Col Markquis); (2) Columbus OH (Col Palmer); (3) Memphis TN (Col Fucci); (4) Hawaii (Col Hall).

4. Defense Property Disposal Offices (DPDO) serve as the installations' local point of contact.

B. MAJCOMs Point of Contacts. MAJCOMs should deal directly with the regional DPDRs when information is needed or problems arise which cannot be resolved at the installation - DPDO level.

C. Sales Contracting Authority

1. Does not come under Armed Services Procurement Regulations (ASPR).

2. Governed by legislative authority.

3. DLA is worldwide in scope vs. CONUS limitations for the General Services Administration (GSA).

D. Contract Options and Comments.

1. Full service contract - under this type of contract the buyer of the recovered materials will provide all public relations (PR) work, conduct educational sessions, provide containers for storage and collect materials from generating areas on the installation.

2. Partial service contract - under this type of contract the buyer provides limited collection of recovered materials and the installation is responsible for the remaining requirements.

3. Comments:

a. Although it is not easy to actually accomplish, all DLA sales contracts contain clauses that allow either the DoD or the contractor to terminate the contract.

b. Industry is not "geared up" to provide full service to all installations, particularly "isolated" bases. Some bases may overcome this problem by contracting (separately) pickup from base generating centers and delivering the materials to industry. This type of service will probably be costly.

E. The DPDS and Associated DPDRs Will: (see also paragraphs V P and VI B2)

1. Identify potential purchasers of recovered materials, and services available by those purchasers.

a. Some areas may not have full-service-available vendors.

b. DLA cannot exclude, as a basis of choice, "Ma & Pa" type companies which act as brokers for larger companies.

c. Standard market research will be used.

d. Materials recovered from all installations within a DPDO's jurisdiction will be included as one package contract to make it more attractive and economically rewarding.

2. Determine buyers' quality specifications and transportation criteria.

3. Determine/estimate the buyers' price(s) and his willingness to buy over the long term.

F. Status of DPDOs. Probably not "set up to go" at this time.

G. Contract monitoring.

1. DPDR, together with DPDO, will execute contract for source separation.

2. Base Civil Engineering, Contract Management, will monitor technical performance of the contract.

H. Marketing History and Effect of Directive 4165.60 . In 1975 DLA received $2,500,000 from sales of computer tab cards. Under the new Directive 4165.60, DLA would now receive $500,000 and the remaining $2,000,000 would be returned directly to the services (at installation level).

I. What Do You Do if Local DPDO is Uncooperative? MAJCOM should directly contact the DPDR office responsible for the installation(s) involved.

J. Handling of Hazardous Waste. The DPDO is not required to dispose of hazardous and other contaminated wastes.

K. Donation of Government Property (Maj Sanpei)

If recycling cannot be accomplished on a self-sustaining basis, but could be accomplished without cost by donation to charitable or non-profit groups, this donation can be used to support recycling.

L. Can File Depositories be Included in Recycling? Yes, but there is usually a high degree of contamination unless intensive labor is utilized to avoid it. Hence, the high cost of dealing with the contamination may make such recycling unattractive.

M. Specifications for Paper. DLA is working on a specification for hi-grade paper that will supplement existing specifications for paper grades.

N. Recommendation for DPDS/DPDR Workshop. A recommendation was made that the DPDS and its regional offices hold a workshop on source separation. DLA will promote this recommendation.

O. Storage. DPDO will store recovered materials if (1) the Base Civil Engineer provides the physical facilities and (2)(if necessary) DPDO is paid for additional expenses incurred.

P. Change to Defense Property Disposal Operational Handbook (DPDS-H) 4160.3. Following is an extract of the change DLA planned to publish 1 Apr 77 in their Handbook 4160.3. This extract was provided to USAF in a letter from DLA-SME, dated 31 Mar 77, subject: Solid Waste Management Resource Recovery Draft Plan. To quote from the letter: "This guidance to DPDOs will cause them to initiate contact with your facility/installations officers to assist in implementations. Possibly the servicing DPDO could be a coordinate member of base planning groups to assure maximum marketing benefit will be obtained from recovered materials."

Extract:

"M. Resource Recovery and Recycling Program. The following is implementation of DoDD 4165.60, Solid Waste Management-Collection, Disposal, Resource and Recycling Program, as it will apply to disposal operations worldwide.

1. DPDS is responsible for:

a. Determining market availability for recoverable resources, as well as estimated length of market availability, and furnishing this information to DoD components within a reasonable time period prior to the establishment of recycling program.

b. Conducting the necessary sales and providing contract administration for marketable materials recovered from the solid waste.

c. Budgeting and financial planning consistent with the provisions of DoDD 4165.60 and mission requirements.

d. Maintaining data on sales proceeds and expenses incurred in this program.

2. DPDS-M is designated OPI for 1 a and 1 b above.

3. DPDS-F is designated OPI for 1 c and 1 d above.

4. DPDS-M will:

a. Identify the recyclable commodities contained in the trash and waste stream generated by DoD component activities. Determine potential market value and projected market duration for such property.

b. Provide market data identified above to the appropriate DPDR-Chief of Sales and DoD component activity.

c. Initiate and maintain continuing market research on commodities for which no current markets are available.

d. Furnish information on nonsalable property as markets are developed to the respective DPDR-Sales Chief for proper action.

5. DPDRs will:

a. Evaluate the impact of the Directive on existing term contracts and coordinate contract cancellations as required with appropriate generating activities.

b. Examine potential generation data transmitted by the DPDOs and assure that the most cost effective method of sale is used.

c. Transmit potential generation data and availability of local markets to DPDS-M.

d. Conduct Sales and provide contract administration for all recyclable material recovered from the trash and waste reported for sale by DoD component activities and in accordance with applicable directives.

e. Maintain data on quantities, proceeds and cost of sales resulting from DoD Solid Waste Management Resource Recovery and Recycling Program and transmit data to DPDS-M on a quarterly basis.

f. Report promptly to DPDS-M significant changes to property generations and market availability.

g. Deposit net proceeds from sale to the account specified by the reporting/generating activity.

6. DPDOs will:

a. Initiate correspondence to each activity supported, requesting identification of existing trash and waste service contracts and identification of estimated quantities of potentially recoverable materials in the trash and waste stream, including but not limited to paper (by types), glass (by color), aluminum cans, bi-metal cans, other metals (by type). DPDOs will provide this information to the respective DPDR.

b. Provide advice and assistance to each activity supported as may be required to expedite host implementation of DoDD 4165.60. DPDO will not physically receive, store or process material recovered by the supported activity.

c. DPDO will inform the generating activities of the conditions under which the activity may be reimbursed net proceeds from the sale of material recovered from the trash and waste stream. The activity must undertake all processing of the material. Existing term contracts may require cancellation.

d. Coordinate to the maximum extent possible, sale of property by all activities supported, to ensure optimum sales results and maximum proceeds.

e. Provide liaison between supported activities and DPDR/DPDS on all requests for marketing/sales assistance.

f. DPDOs will report promptly to the Region any significant change to the generations of recovered materials. An increase or decrease of 50% is considered significant."

VI. Steps Towards Implementing Source Separation of High Grade Paper

A. General:

Draft guidance for preparing analyses of paper source separation was discussed. On 18 April 1977 HQ USAF distributed guidelines to all MAJCOMs. These are reproduced under paragraph B below; amplifying comments and guidance are documented in succeeding sections of the Proceedings. Appendix VI contains an excerpt from an Army study on source separation and contains information on newspaper recovery.

B. Steps Towards Implementing Source Separation of High Grade Paper (see next page).

STEPS TOWARDS IMPLEMENTING
SOURCE SEPARATION OF HIGH GRADE PAPER

1. Determination of quantities of high grade paper which can be source separated and available for sale.

a. Identify all admin offices on the installation which will be participating.

b. Estimate quantities of high grade paper which can be recovered. Use EPA estimate 1/2 lb/per person/per working day.

c. Develop plan for source separating (desk-top system recommended).

(1) Hold initial meeting w/key personnel (building custodians, DPDO, etc.).

(2) Identify "clusters" of workers (10-15) for larger container.

(3) Identify storage areas (must comply with fire regulations).

(4) Determine frequency of pick-up.

(5) Determine where paper will be centrally stored until shipment is made.

2. Defense Property Disposal Office (DPDO) Assistance:

a. Using the plan developed and high grade paper quantities estimated (installations must have this information to DPDO not later than 29 July 1977 for a regional market analysis), DPDO will provide information on market availability and value of paper for installations to use in their economic analysis.

b. Determine with DPDO, maximum services available from the paper buyer. Best not to consider only the price the buyer offers, but also what services he is willing to provide. Is he willing to pay a price that would rise with the market price of paper, but only fall to a stipulated minimum, even if the market price declined below it? Is he willing to provide desk-top containers, educational briefings for employees, more frequent pick-ups? AF benefit to have maximum services, but with price still above break-even point.

c. DPDO has been instructed to obtain best prices available. DPDO is responsible for "pooling" all of the high grade paper available from the Defense installations in the region for best price.

3. Preparing an economic analysis:

a. Proceeds

(1) Determine proceeds available through sale of high grade paper.

b. Costs (actual increase in expenses)

(1) Determine any increase in custodial services due to pick up of segregated high-value paper. Since there will be no increase in the actual amount of refuse collected but an adjustment in the method of pick up, custodial services costs may not increase.

(2) Admin office worker cost to separate the paper at his desk should not be included. Only actual increase in expenses should be included.

(3) Determine any collection costs for pick up at admin buildings and centrally storing.

(4) Determine any equipment, container, materials cost.

c. Cost Avoidance or Savings

(1) Determine reduction in existing collection cost due to source separation.

(2) Determine reduction in disposal cost due to source separation.

4. Based upon the economic analysis prepared above, determine whether installation will implement source separation or not. (A detail data call sheet is attached).

5. If decision is made to implement, develop an extensive public information/ relations program for all personnel affected.

1 Atch
Detail Data Call

Detail Data Call

Name of Agency
Name of Facility
Address of Facility
Population Represented (by administrative employees or family residences)
Estimated total tonnage of mixed waste generated by the facility before source separation
Estimated remaining mixed waste tonnage that would be generated after a source separation program is implemented
Estimated cost per month of collection labor prior to implementation of a source separation program
Estimated costs of collection labor after implementation of a source separation program
Estimated cost per month of collection supplies and equipment prior to implementation of a source separation program
Estimated cost of collection, supplies and equipment after implementation of a source separation program
Estimated additional cost per month of storage space needed for waste materials after implementation of source separation program
Estimated additional administrative costs of solid waste management to implement and maintain a source separation program
Estimated costs of disposal of mixed waste materials before implementation of a source separation program
Estimated costs of disposal of remaining mixed waste materials after recyclables have been removed by a source separation program
Estimated savings resulting from cost avoidance after implementing a source separation program, identify each savings
Estimated tonnages of recyclable wastes being collected which are being sold prior to source separation program implementation. Computer/PCAM Cards - computer tabulating/printout paper - corrugated box materials - white ledger paper - newspaper
Estimated tonnages of recyclable wastes which will be collected and made available for sale after implementation of source separation

VII. EPA Fact Sheet on Source Separation Guidelines - Mr Steve Howard

FACT SHEET ON SOURCE SEPARATION GUIDELINES

AND

THE USE IT AGAIN SAM - RECYCLE PROGRAM

I. On May 24, 1976 EPA's source separation guidelines, entitled "Material Recovery Management Guidelines for Source Separation," were published in the Federal Register. These guidelines, which are in final form, mandate that all federal agencies with 100 or more employees must recycle high-grade office wastepaper where economically feasible.

Guideline Objective: To bring about maximum levels of economically feasible paper recovery.

Guideline Requirements: Separation at the source for recovery of

1. High-grade papers (tab cards, computer paper, white ledger) from federal buildings with 100 or more people
2. newspapers from facilities housing 500 or more families
3. corrugated papers from facilities generating 10 or more tons per month.

II. EPA Implementation Program - Use It Again Sam. EPA Headquarters as a model.

A. The Program. We are calling our program USE IT AGAIN SAM - RECYCLE: A Federal Government High-grade Paper Recovery System. Based upon our studies and the EPA Headquarters program, we recommend the desk-top container system, in which each employee is provided with a desk top container (taking up no more than 14 square inches) into which he or she places whatever recyclable material passes over the desk.

B. What Is Recycled? Under this system, acceptable papers include the following:
1. all high-grade white ledger paper
2. computer printouts
3. computer tab cards.

Unacceptable items include:
1. all colored paper
2. newspapers and magazines
3. envelopes (Letter and manila)
4. glossy paper
5. manuals with glued binding
6. styrofoam

7. rubber bands and paper clips
8. carbon paper

Note: staples are such a minor contaminant that they are acceptable. The program does not require that employees unstaple paper. However, self-adhesive correction tape is not acceptable, and must be removed before the paper can be recycled.

C. The Way It Works. The recyclable paper is separated out at the employee's desk, and allowed to accumulate in the desk top container. (It takes approximately two weeks to fill a container.) The next step is to transfer the paper from the desk top container to the recycling station. Recycling stations are located in convenient central locations that employees pass through frequently. At his/her convenience, the employee takes the papers from the container to the recycling station--often located in a secretarial bay--and empties his/her papers into the container. At the Waterside Mall (Headquarters), our containers are cardboard boxes identified as recycling stations by a bumper sticker saying "Use It Again Sam" and a Use It Again Sam Recycle poster placed on the wall above. One recycling station services approximately 20 employees. Paper is collected from the recycling stations several times a week. It is emptied into a special cardboard collection cart in which it is transferred to the basement storage area. The paper is then transferred from the collection cart to large boxes called gaylords where it remains until a shipment is made. The gaylord boxes hold an average of 1500 pounds, and space is needed to store about 8 of these boxes. (Note that the particulars on this will vary according to the situation. Modifications of specific aspects of the general program may have to be made to adapt it to a facility's particular problems.)

Shipments are made out of EPA headquarters on a bi-monthly basis (generally). Once the gaylords are loaded onto the truck (by EPA personnel), the paper becomes the property of the contractor. The paper is then taken to Shade facilities where some further sorting occurs, after which it is delivered to a paper mill where it is shredded, run through a hydropulper, and otherwise processed

to make recycled paper.

D. Other Options. There are other ways of collecting paper in a desk top container system, although we do not recommend these as strongly as the process we employ. (Again, the particular factors in a given situation will determine the course that is chosen.)

1. Collection by mail cart. If mail is delivered directly to employees on a desk-to-desk basis, the lower part of a mail cart can be used to collect separated paper directly from the desk-top containers.

2. Storage in small sealed boxes. Another possibility is to store accumulated paper in small boxes which the employee seals. These boxes can then be mailed to the contractor, or stored and shipped.

3. Baling paper. This method of storage has its advantages, but also can complicate matters if the bales must be dismantled to remove contaminants. It may make sense if your facility already has a baler on the premises, but otherwise it is unlikely to be worth the investment.

E. Why Recycle? Why should you consider recovering paper? The four main reasons are 1. to conserve resources
2. to lower environmental emissions
3. to set a Federal example for others to follow
4. to save money

III. Economic Feasibility. The program is predicated upon the cost-effectiveness of office paper recycling. We firmly believe that, given a secure market, this can be run on a break-even basis, at the minimum, and will more likely be economically advantageous (as well as being environmentally sound).

A. Private Companies. At present close to 400 private companies have chosen to employ the desk-top container system. These include:

1. State Life Farm Insurance
2. Blue-Cross-Blue-Shield
3. International Business Machines
4. Western Union
5. RCA Corporation
6. Ralston Purina
7. American Telephone and Telegraph
8. J.C. Penny
9. Dow Chemical
10. National Car Rental
11. International Harvester

B. Federal Facilities. A large number of Federal agencies in Colorado are currently using the system, ranging from the U.S. EPA regional office with 285 employees, to the National Bureau of Standards with 1400.

1. National Bureau of Standards.

   a. 1300 employees involved
   b. 95% participation
   c. reduced disposal costs by $2400 per year (28%)
   d. no additional janatorial costs
   e. reduced disposal tonnages by 32%
   f. 2% contamination
      (below stipulated 3% maximum contamination)

2. EPA Headquarters-Washington, D.C.

   a. 2700 employees involved
   b. implemented 11/19/75
   c. 40% waste reduction
   d. generating an average of 1300 lbs. (.65 tons) per day recyclable paper
   e. current price: $75/ton
   f. costs incurred: additional labor -5 hours/day

C. Office Separation Case Studies have been conducted which indicate the following:

1. reduction in solid waste management costs by 21%
2. waste reduction 39%
3. recovery effectiveness 75%
4. participation 90%
5. contamination 3%
   (although recently contamination has been down to 1% here at EPA)

IV. Organizing a Program. As briefly outlined below, establishing such a program entails four basic steps.

A. Determining a market. The first step is to find out if anyone is willing to buy the paper. In the Federal Government, this services is performed by the Federal Supply Service of the U.S. General Services Administration. A private organization can determine if a market for its wastepaper exists by looking in the Yellow pages under "scrap dealer," "wastepaper dealer," salvage dealer," "recycling," or other similar categories.

B. Determine how much recyclable paper you can offer a buyer--i.e. determine the amount of high-grade office paper waste your office generates. A rough sample at EPA indicated that each employee throws away almost half a pound of white high-grade paper per day. Altogether, EPA throws away about 1300 pounds of high-grade paper per day. With a totally effective program EPA could offer a buyer about 14 tons of paper a month.

C. Choosing a Buyer. It is best not to consider only the price the potential

buyer offers, but also what services he is willing to provide. The bidder who won the contract for EPA's wastepaper agreed to pay a price that would rise with the market price of paper, but would only fall to a stipulated minimum, even if the market price declined below it. In addition, as part of its bid, the contractor agreed to provide EPA with educational briefings for employees, as well as some of the basic materials needed to collect and store wastepaper.

D. The final, and perhaps most crucial step, is to hold educational briefings to acquaint employees with the new program. So that every employee might attend a briefing, a series of these 15 minute sessions was scheduled in a large conference room for a period of three days. The briefings consisted of a slide presentation about recycling in general, this program in particular, and an explanation of contaminants. Questions from the audience were answered at the end of each session.

In addition to educational briefings, several other preparatory steps must be taken to insure the success of a program:

1. a memorandum from the head of an organization should inform employees that a recycling is to be started shortly, and it should require all employees to attend one of the educational sessions.
2. the custodial staff must arrange for the storage of paper in conformity with fire and safety regulations.
3. The services of a coordinator are necessary to supervise the implementation and early operation of the program. Initial program implementation required man/hours at EPA.

A key to success in such a program is the maintainance of a strong public awareness campaign---don't let the people forget the program is there and that their performance is of crucial importance. One the program is established, it will generally run itself aside from publicity boosters.

Our Office Paper Recycling Program--Waterside Mall

Full Service Contract with Shade, Inc. (Green Bay Wisconsin)--they provide the desk-top containers, boxes for recycling stations, gaylord boxes (the big boxes for pallets of paper) and hauling services. They also help with some of the initial publicity and educational services.

A full service contract also guarantees a floor price---a stipulated minimum that the company will pay for the paper no matter how low the paper market goes (prices fluctuate widely--right now prices are good, but last year they were poor and they could be poor next year. A floor price guarantees that the program can at least break even.) We are paid $75/ton right now, about $20 less than the current market price (which is about $95/ton), but including all of the extra services. Minimum price range would be $30-$40 per ton.

desk top containers - called "Extend-a-files" made by the Rogers company in Madison Wisconsin, 53711. Price that has been quoted is about 65¢ each (in bulk), and they are much more expensive individually, of course. Shade provides these for us, and that really should be part of any contract.

Model Contract. G.S.A. is working on a model contract for full service. At present it is still sitting in the GSA legal services office, but we expect and hope to have it out soon. Once it comes out, we can go on the implementations.

Labor: so far has been 1 person-5 hours a day to service 2700 employees. (This is much lower than was originally estimated--originally it was thought 2 people would be needed full time.) Depending upon janatorial personnel at an offices disposal, this program can be implemented with no additional labor costs.

Storage. There are different ways of doing it, but one really does need the storage space to accumulate 5 tons of paper--about 8 gaylord boxes.

GSA--guidelines are not yet out to personnel
our (EPA) implementation manual is not yet out--but will be soon
right now we only have a draft of the model contract.

it is a sound business proposition.

Notes

Slide show: with 30 copies we now will be able to judiciously send these out to people. There are two shows about the Use It Again Sam program---one which is used for the education of higher-up personnel and managers who need to be convinced of the feasibility of the program and its viability. This includes the economics, and is about 1/2 hour show. Also, an abridged version of the show, excluding the economics, is used for employee education. This is about a five minute show. (This slide show has been given to MAJCOM representatives.)

VIII. Comments Relating to Source Separation - Mr Steve Howard, Major Sanpei and Capt Olfenbuttel

A. Why is the desk-top container system recommended by EPA? EPA experienced the highest employee participation rate and lowest contamination rate using the desk-top container system, when compared to using a dual-basket, mail distribution system.

B. Is the desk-top container available through GSA? Yes. The container is made from two Extend-A-Files fastened together. They come in 12 colors, but EPA recommends white. The following information is useful for ordering:

Ordering Office: W. T. Rogers Company
P.O. Box 4327
Madison WI 53711
Phone: 608-257-2227

Item: Extend-A-File
Item No 2540-11 (11 is code for white)
Size: 7½" x 8¼" x 2 1/8"
Packed: 12 sections per box (2 sections make one container)

Price: $0.43 each section.

GSA Contract Number: GS-ØØS-Ø9969

Period of Contract: 11-2-76 thru 8-31-77

FSC Class: 7520

C. What are some basic factors to be considered?

1. Is the material of significant value to market?

2. Are there markets?

3. What effects will recycling have on collection and disposal operations?

4. What are anticipated net costs or savings? Look at the program from an entire system/materials flow standpoint.

5. What will your participation rate be?

D. What are planning factors for determining manpower needs?

1. For Implementation preparation (PR, education sessions, coordination, etc.): 8 manhours/100 employees.

2. For collection of high grade paper (if additional manpower is required to load trucks, etc.): 7 manhours/100 employees/month.

E. What are cost planning factors for Public Relations needs?

1. Initial PR costs: $7/100 employees.

2. On-going PR costs: $1/100 employees/month.

F. Does janitorial assistance mean extra costs?

Usually not. For example, no additional costs were experienced in programs at the Denver Federal Center; the Boulder, Colorado National Bureau of Standards; and the EPA Headquarters Building in Washington DC.

Within the military, Capt Uhlik indicated that the paper recovery program at HQ SAC, Offutt AFB NE incurred no additional costs. Capt Olfenbuttel also indicated that although the Navy paid the janitorial contractor an additional $1600 for his assistance during a three-month source separation test of Port Hueneme CA, the contractor expended no additional resources, which implied he really had no additional costs!

G. What factors can be used to estimate quantities of potentially recoverable materials?

EPA has developed useful factors listed in Table I. These factors already account for historical recovery effectiveness; for example, the high grade paper factor of 0.5 lb/person/day assumes a 75% recovery effectiveness of the available high grade paper in the waste stream.

H. How can we determine the number of desk-top containers we'll need?

1. There are apparently a couple of ways of doing this. One is to assign one container per 150 sq ft of Administrative space.

2. Capt Olfenbuttel stated that the recycler at Vandenberg AFB CA coordinated with Base Supply, determined how many typewriters were on inventory, and assumed that each typewriter supported 2 desks (and hence, 2 containers).

3. No correlation of accuracy between these two particular methods has been made, although the first method has proven useful for EPA, and the typewriter approach is still in the planning stage at Vandenberg.

I. Which is usually more successful - Recycling Centers or Curbside Service?

TABLE I

COMPOSITION OF OFFICE SOLID WASTE
BY BUILDING TYPE*

Material	Generation/Building Type (lbs/employee/day)			
	Bank/Insurance Co.		General Office	
	Average	%	Average	%
Paper				
Computer Tab Cards	0.39	17	0.05	3
Computer Printout	0.70	30	0.11	7
White Ledger	0.70	30	0.51	33
Subtotal (High Grades)	1.79	77	0.67	43
Colored Ledger	0.12	5	0.09	6
Newspaper	0.07	3	0.25	16
Corrugated	0.05	2	0.14	9
Other#	0.14	6	0.17	11
Subtotal (Paper)	2.17	93	1.32	85
Non-Paper+	0.14	7	1.55	15
Total	2.31	100	1.55	100

* Based on representative solid waste sampling conducted at six buildings studied by EPA, does not include cafeteria waste.

\# Generally non-recyclable paper: carbon paper, wax coated or impregnated paper products, etc.

\+ Small quantities of garbage, metal, plastic, glass, textiles, wood and other materials.

1. Curbside collection is usually more effective. For example, if we look at the newspaper recovery effectiveness:

a. Using Centers: 15% recovery of available newsprint.

b. Using Curbside: 30-40% recovery of available newsprint.

2. Source separation has also been found to be unsuccessful in residential areas where back door refuse collection service is practiced.

J. How do you determine newsprint flow on military installations? Newsprint flow appears to be lower in military residential housing areas than in the civilian community. One way of estimating the flow is to determine the average weight of newspapers in your area, survey to determine the number of papers used per day and miltiply these together to get average daily tonnages, etc.

K. Can "carbonless computer paper" be recycled? Yes.

L. Does the Privacy Act interfere with computer paper and card recovery? No, the requirements have been removed from these materials.

M. Options - Storage vs. collection frequency vs. cost.

1. Usually, the larger the quantity stored, and the lower the frequency of the collection, the lower the cost and higher the dollar return.

2. Storage vs. collection frequency involves tradeoffs between collection desires (of the buyer), collection capabilities (contract or in-house resources), number of pickup points and storage capacities, container types and fire protection requirements.

N. Why weren't glass & cans included as mandatory recoverable materials in EPA Guidelines for DoD? The physical "isolation" of many installations from marketing centers would make marketing of recovered glass and cans very difficult. However, recovery of these items is recommended whenever possible.

O. Potential Installation - DPDO problem?

Comment: Some Command representatives believed a past and potential problem with DPDS/DPDO is the latter's possible overlooking of markets in the vicinity of the base. This possibility apparently arises under those circumstances where the DPDS/DPDO is not physically located near the base(s) in question.

Response: Lt Col Pyne, DLA, requested that specific instances be identified to the DPDR offices.

P. What will happen in those situations where Boy Scouts, etc., are currently involved with recycling on base? Assimilate them into the program whenever possible. Negotiate with the buyer, DPDO, etc., to utilize these volunteer groups in the new program. A good example of this assimilation is at Vandenberg AFB where Boy Scout groups have historically operated. The solution reached by the Buyer/Recycler was to guarantee the Boy Scouts the dollar returns they received the previous year in return for the Boy Scouts assisting the Recycler in collecting separated materials and processing them at the Recycler's on-base staging area. If sufficient, specified revenues are reached in the sale of recovered materials, the Boy Scouts will receive additional revenues above and beyond their guaranteed monies. The additional revenues provide incentives for the Scouts; they also have incentives, for maintaining their level of performance, in the form of losing their collection routes to other voluntary groups (e.g., other Scout groups) if they don't perform. This scheme has been enthusiastically accepted by the Scouts and should promote the program.

IX. Comments from a Buyer - SHADE, Inc. (Green Bay, Wisconsin)

A. Full-service Contractor

1. System's managers work with project officers within their respective buildings to determine the best "material flow." Then they make presentations to managers and office personnel in order to win their acceptance of the source separation program.

2. They provide initial public relations (PR).

3. They provide occasional PR boosts, when appropriate.

4. They usually can provide the desk-top containers, boxes for recycling stations, large storage boxes and hauling services.

B. Critical factors for Success?

1. Endorsements from "the Top" of the local command.

2. Every employee must attend "get acquainted/Public Relations" sessions to know what is going on and what their assistance role is.

C. Why should SHADE and other companies be interested in recycling paper?

1. SHADE predicts a "shortage of pulp as early as 1978" and they want an assured source of supply.

2. Weyerhauser and Kimberly-Clark have instituted waste paper recovery systems. Weyerhauser, which is the biggest forest land holder outside the Federal Government, has stated that its trees will be used for lumber, and pulp mills will have to learn to use wastepaper as a source of pulp!

3. Energy and economics: EPA studies show that utilizing waste paper rather than virgin pulp saves energy in the range of 60-70%. It also requires many fewer chemical resources in the paper-making process.

D. What makes SHADE go? They use their paper product distribution system: trucks delivering paper to distribution centers are used to backhaul wastepaper to the pulping plants.

E. How are papers stored for SHADE collection?

1. Large 1500 lb capacity boxes called gaylords are used.

2. Diagonally cut boxes are used for computer paper.

F. SHADE's approach to, and observation of, on-base programs.

1. Usually address large volume/quantities generated by a small number of buildings; less than 1 ton per building is uneconomical for implementation.

2. Both multipoint and central pickup programs are possible.

3. Usually, no additional manpower is needed to support the program.

4. Material flow within buildings is usually very smooth.

5. Source separation usually leads to subsequent reductions in other office supplies, such as scratch pads!

G. Contamination

1. Five percent is the maximum allowable.

2. It is a continuing problem, but not a significant one. Peer pressure helps to keep it low.

3. Adhesive labels, etc., are difficult to detect.

H. Does Shredding Help?

1. No. It creates voluminous quantities that are not economical to transport.

2. It also impedes detection of contaminants.

I. Does Baling Help?

1. Usually, little baling is accomplished; however, it does facilitate handling and, as a consequence, may bring better prices from SHADE because of reduced handling costs.

2. Baling also allows buildup of larger quantities, less frequent pickups, and can potentially bring higher prices from the buyer because of these factors.

3. The most practical, cost effective approach is to manually flatten the paper, particularly cardboard.

J. Are wastes from paper-pulping destruction methods used for classified documents recyclable? No. The pulping produces a nonusable powder (when dried) rather than fiber needed for paper production.

K. What geographical areas of the USA can SHADE service?

1. Presently, it serves those areas indicated on the accompanying map (see Figure 1).

2. One hundred miles from each Distribution Center is the maximum distance it will usually serve.

3. The Company is presently seeking agreements with competitors to implement SHADE's program and work cooperatively on recycling in areas currently outside SHADE's coverage areas.

4. In areas outside their present coverage, SHADE would consider contracting if large, railroad-size loads of recovered materials could be guaranteed by the installation. Large size loads may make the concept economical in those areas.

5. For those installations in the Southwest, Fort Howard Paper Company in Muskogee OK needs recycled paper for their new mill. This region would include Oklahoma and Texas.

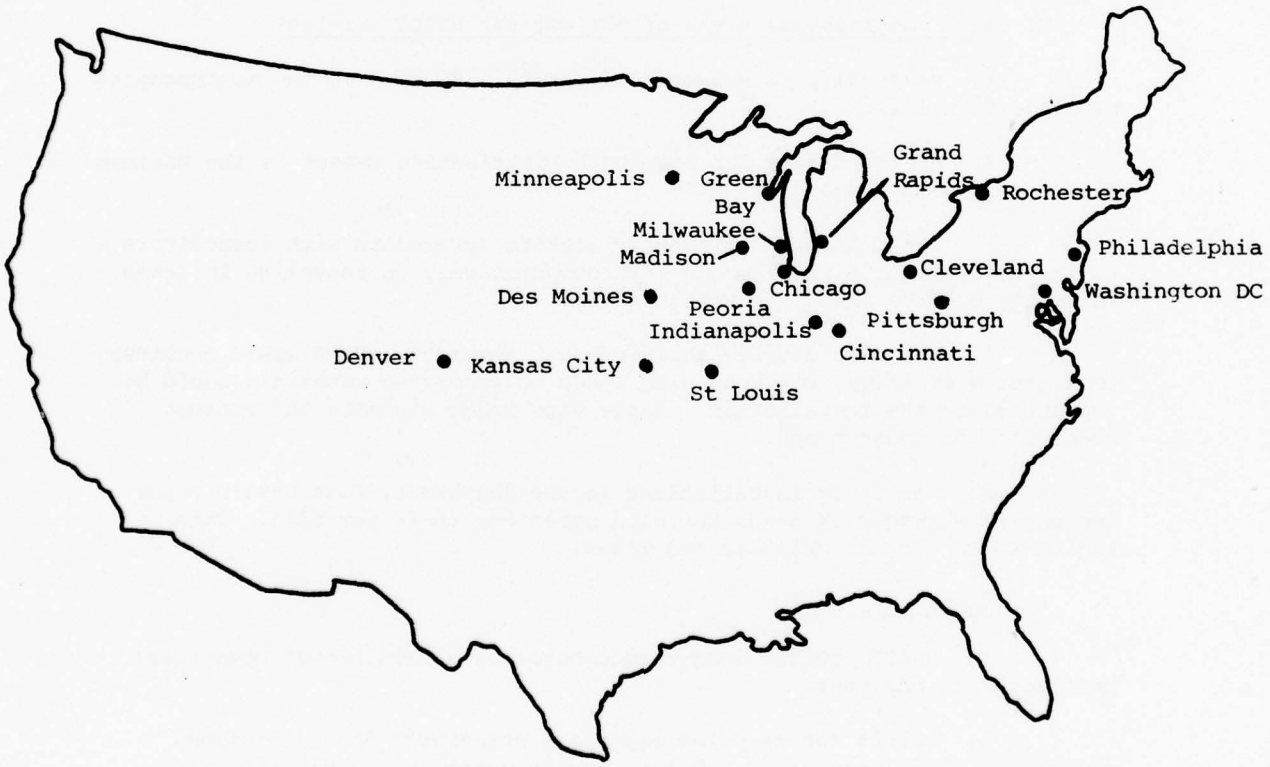
L. Contracts

1. SHADE desires long-term contracts, although most commercial contracts are one year.

2. Prices for recycled paper are structured upon a minimum guaranteed floor price (now $35/ton) and an accompanying sliding price scale tied into the Chicago Board of Trade (now $50-70/ton).

FIGURE 1

SHADE DISTRIBUTION CENTERS AND SYSTEMS



3. Hi-grade white ledger paper is priced separately from computer paper and tabulating cards.

M. Emission factor estimation

1. Government organizations generally generate more than the EPA estimate of 0.5 lb/person/day of hi-grade paper waste (?).

2. Another method to use is to research procurement/supply records for retention times of paper (but this method seems to assume that all procured paper goes into the waste basket on that respective installation; such an approach may lead to too optimistic projections of potentially recoverable paper. Editor's note!).

X. Feasibility Study on Source Separation at Vandenberg AFB CA - Capt Robert Olfenbuttel

A. Purpose:

1. To demonstrate source separation implementation, and

2. To develop data for modeling similar programs on other Air Force installations. Data will also be assimilated from other source separation programs/attempts at other bases, the Navy and Army in order to develop factors that will increase the likelihood of success for Air Force implementation of source separation.

B. Objectives:

1. To determine the effectiveness of source separating recoverable wastes through regulation and a residential "voluntary" source separation program.

2. To determine the effectiveness of a base-regional cooperative program.

3. To test the feasibility of EPA recommended desk-top container system.

4. To determine cost/benefit factors:

a. Actual program operating costs.

b. Proceeds available for recovered materials.

c. Reduction of present solid waste collection and disposal costs.

C. Background:

1. Where conducted: Vandenberg AFB CA, 16 Mar 77-15 Mar 78.

2. Base characteristics which describe solid waste related factors and are useful for translating the Vandenberg AFB experience to other bases:

a. Mission functions and support activities that contribute to solid waste generation.

(1) Industrial operations primarily involving missile assembly and technical/maintenance support.

(2) Commercial-institutional areas consisting of:

Offices
Clubs (Airman, Officer, NCO)
Exchange, Commissary
6 schools
Hospital
Chapels, etc.

(3) Residential areas with more than 2,000 multibedroom units, trailers and 1,200 airmen dormitory beds.

b. Population:

(1) Working - 10-11,000 military & civilian

(2) Housing - approximately 5,000

c. Tonnage: Approximately 27 TPD, roughly broken out as:

(1) Approximately 10 TPD - residential

(2) Approximately 17 TPD - other

D. Base Recycling History

1. Initial program: This is not the first time that VAFB has been involved with recycling. In October 1973 the Base Civil Engineer initiated a voluntary recycle program. A collection center was designated and shortly thereafter markets were located, equipment support was obtained (from the salvage yard!) and collection procedures were established.

2. The initial program was limited to 15 dropoff/pickup points strategically located around the base at high traffic centers such as the BX, Commissary, and points within the MFH area. Containers for storage consisted of 55 gallon cans and specially constructed bins for newspapers and some cans. Boy Scouts were used to process and stack newspapers.

3. Materials collected represented upwards of 10% of the base's commercial, institutional and residential solid waste tonnage. Materials recovered included computer paper, cardboard, newspapers, aluminum and bi-metallic cans, and glass.

4. The program suffered a financial loss of approximately $16,000 in a six month period of FY 75. It became relatively inactive, except for a small, continuing effort by the Boy Scouts in newspaper recovery. A significant factor in the cost deficit was the cost of labor which accounted for 90% of the cost!

5. Reasons for "failure" of the program:

a. Lack of manning in base Civil Engineering and lack of equipment authorizations. Base Civil Engineering was forced to "rob Peter to pay Paul" with their mission support personnel: personnel taken from in-house work functions to support the recycling program eventually had to be returned because the mission support suffered. When this was done, the recycling program suffered because austere funding limited hiring of temporary personnel to support the program.

b. Lack of financial incentives for the Base Civil Engineer (BCE). Prior to DoD Directive 4165.60, revenues received from sales of recovered materials could not be returned to the BCE to offset his costs.

c. Lack of markets for recovered materials, as handled by the local DPDO.

E. Regional Resource Recovery around Vandenberg AFB

Santa Barbara County-Wide Source Separation Operations

Primary location - Santa Barbara Recycling Center, Santa Barbara CA

Non-profit organization

Handles

Newspaper
Computer paper
Bulk ferrous metals
Glass
Specialty paper
IBM cards
Cardboard

Five year material contracts - guaranteed minimum base price

Satellite recycling centers planned throughout County - on a minimum cost basis

Proposed establishing a model at Vandenberg

F. Approach. The test is essentially divided into three phases: Pretest, Test and Post-test.

1. Pretest period

a. Characterize the base solid waste management system, to include:

Waste sources
Method/type of collection
Quantities
Collection Costs
Disposal quantities & costs
Method of disposal

b. Determine compositional characteristics of the test-involved waste streams

c. Estimate quantities of potentially recoverable materials from offices and clubs, and the MFH areas.

d. Conduct public relations campaign

e. Determine the impact on & negotiation terms for:

Janitorial service
MFH refuse collection service

2. Test period

a. Contract with the Santa Barbara Recycling Center, to include:

(1) Establish Satellite Recycling Center on base

(2) Provide publicity program

(3) Pick up computer paper, tab cards & specialty paper from generating centers on base. This includes:

(a) DLA waiver obtained on their claim to paper.

(b) Incrementally phasing of the recovery program as follows:

1. Major paper producing office areas first

2. Only AF-controlled buildings

(c) Individual desk-top separation

(d) Janitorial gathering

(e) Contractor collection and transfer to staging area

(4) Contractor pick up cardboard and mixed glass from clubs

(5) Curbside pickup in housing of newspaper and mixed glass (however, based on pretest characterization, the contractor will concentrate on newspaper and aluminum cans)

(6) Incentive awards: the contractor will return 5[illegible]% of his revenues to base social organizations, such as the Little League, women's clubs, soccer league, et cetera, for their use, in hopes of thus promoting the recycling program through actions of those groups made possible by the recycling funds.

b. Terms of the contract include:

(1) $12,000 payment by the Air Force, including $6,000 paid during the first month to alleviate the cash flow problem of the nonprofit contractor.

(2) Revenue sharing:

(a) *Total revenue anticipated:* $115,080.

(b) Minimum revenues required by contractor: $67,000.

(c) For every dollar received above $67,000, up to $79,000, the contractor returns a dollar to the Air Force.

(d) For revenues received above $79,000, the contractor and the Air Force equally share the dollars. Thus, revenue distribution at the minimum projected volume would be as follows:

Total revenue generated		$115,080
Contractor minimum required	-	67,000
		48,000
Returned AF payments	-	12,000
		36,080
Net return to treasury		
$\frac{36,080}{2}$	=	18,040

c. Evaluation of test progress will be accomplished to determine:

(1) Source separation effectiveness

(2) Impact on cost of:

(a) Collection operations

(b) Janitorial services

(c) Disposal operations

(3) Revenue histories

(4) DLA/DPDO markets for recovered items and how DLA would have performed vs. how the contractor performs.

d. Decision point. At the sixth month, both the contractor and the Air Force will make a decision on whether or not to continue the test.

e. Progress reports will be made both by the contractors and the Civil and Environmental Engineering Development Agency (CEEDA/ECW). The latter's reports will be provided periodically on implementation procedures.

3. Post-test period will include:

a. Evaluation reports on effective source separation factors gathered from VAFB, Navy-Civil Engineering Laboratory and the Army - Ft Meade.

b. Final report to all commands and bases.

c. Possible continuation of the VAFB program with the DPDO, rather than base Civil Engineering, as the agency responsible for the contract Statement of Work.

XI. MAJCOM Resource Recovery Activities and Other Comments

A. SAC Recycling Programs - Capt Felix Uhlik

1. History

a. On 24 September 1971, HQ USAF/PREV recommended MAJCOMs select a base to participate in a six-month pilot recycle program designed to determine whether markets were available, base residents would participate, and net proceeds could be realized.

b. On 1 July 1972, Carswell and March AFBs began the six-month pilot program with $15,000 command funds. The pilot program was extended to complete FY 73, and an additional $15,000/base were provided.

c. On 1 July 1973, The Carswell and March AFBs programs were funded $50,000 each. Vandenberg AFB began a recycle program voluntarily and without funds support.

d. Initially, the unregulated programs were quite successful because of their flexibility and the high availability of markets. Recycling managers had great leeway in obtaining overhires and normally unauthorized equipment to support programs which were receiving great visibility and high level interest.

e. On 20 March 1974, AFM 91-11, Solid Waste Management, was published. Chapter 3 described a recycle program and outlined how it could be implemented. Contract sale of recoverables by the local Defense Property Disposal Offices (DPDO) was emphasized.

f. On 24 April 1974, HQ USAF/PREV ALMAJCOM letter, Recycling, outlined the status of Air Force recycling. Alternatives for recycling were discussed, and local programs were encouraged. MAJCOMs were also alerted to Air Force Accounting and Finance Center (AFAFC) publishing procedures whereby Air Force recycle program expenses can be reimbursed with net proceeds, and OSD publishing a DOD manual concerning recycling, thereafter making some type of program mandatory.

g. On 1 July 1974, Carswell and March AFBs receive $50,000 each in EEIC 53330 for their recycle programs. Vandenberg was inadvertently and erroneously omitted from this FY funding.

h. On 27 December 1974, Public Law 93-552 was signed. Section 612 of that law stated proceeds from the sale of recycleable materials would be credited first to the cost of

collection, handling, and sale of the material including purchasing of equipment to be used for recycling purposes; and second, environmental improvement and energy conservation projects at those bases running recycle programs. The amount spent on environmental improvement and energy conservation projects was limited to $50,000 per base per year, and any balance would be returned to the Treasury as miscellaneous receipts. Since this direction contradicted guidance in the DOD directive, the directive was subsequently rescinded.

i. CSAF/PRE 241715Z JUN 75 to DE authorized equipment procurement from proceeds in Vandenberg's local account. On 30 June 1975, the base procured a new cardboard/paper baler for $4,500.98: DPDP received $2,342.60 of proceeds incorrectly deposited in the local account, and $1,087.58 could not be obligated by close of business. Because the holding account had a two-year suspense ending 30 June 1975, the $1,087.58 was returned to the Treasury.

j. On 1 July 1975, recycle funds for FY 76 were disbursed as follows:

	($000)		($000)
Barksdale	$20	Griffiss	$20
Blytheville	$20	Grissom	$20
Carswell	$50	March	$55
Castle	$20	Minot	$20
Davis-Monthan	$20	Offutt	$20
F E Warren	$20	Vandenberg	$50

k. Bases receiving $20,000 had identified to this command that local markets were available and pilot programs could be started.

l. On 11 July 1975, DEV letter to HQ USAF/PREV made the first submission of the semiannual Recycling Program Progress Report, RCS: DD-H&E(SA)1359. In summary, 10 SAC bases had recycled 1,193 tons of materials or 2.1% of that solid waste originally purchased with private funds. Over 90% of these materials came from the Carswell, March, and Vandenberg AFBs programs.

m. On 13 February 1976, proposal for Santa Barbara Recycling Center forwarded to HQ USAF/PREV for review.

n. On 30 June 1976, all SAC recycle programs suspended. No funds in FY 7T or 77.

o. On 15 July 1976, HQ SAC/DEPP ALMAJCOM message suspends semiannual Recycling Program Progress Report, RCS: DD-H&E(SA)1359.

2. Problems

Base programs are experiencing severe operating problems for the following reasons:

a. Full time UDL authorizations have not been established.

b. Table of Allowance for recycle equipment has not been developed.

c. Markets are at a three-year low for paper and scrap metals, and nonexistent in some areas for glass.

d. Accounting procedures for retaining proceeds at the base for expenditure on the program do not exist.

e. Alternate sales procedures do not exist in instances where DPDO will not or cannot locate markets yet CE program managers can.

f. Lack of commander interest at the base.

g. Unrealistic definition of what solid waste the CE program is permitted to sell. (Only MFH wastes and office bond paper.)

h. Lack of aggressive action in locating markets by base DPDOs.

3. Present efforts

a. Vandenberg AFB - reference Capt Olfenbuttel's comments, Section X of these Proceedings.

b. HQ SAC Building

(1) The program has been going on since 1973. It only involves mixed paper for which they are receiving $6-8/ton vs. high quality paper which is selling for $70/ton. The contractor who buys the paper pulls out all the computer paper and receives $170/ton for it! Capt Uhlik is currently attempting to determine how much high quality paper, including computer paper, is available in the Building's waste stream. He estimates that present recovery is only 1/4 of what is available. Within the building they've been collecting about 8 tons per month, and base-wide, it amounts to about 20 tons per month.

(2) How is the paper gathered? The custodial contractor picks up the paper from inside the doorways of each of the offices. Most of the office workers just have cardboard boxes in which they put their recycled paper and then on Monday, Wednesday and Friday they put the paper inside the doorway along the hallways. Then the custodial contractor comes along with

one of those low type laundry carts and dumps all the paper into there. He has done this with no increase in cost for his contract. When the paper has been collected on all the floors, it is brought down to the basement to our loading dock area, still in these carts. A local Omaha paper company then comes in a couple of times a week and picks up the paper from there.

(3) Do they pick up the carts or do they just dump the carts? Capt Uhlik wasn't sure. He has never observed them loading onto the truck, but they do weigh it coming out of the building.

(4) What sort of participation rate and command support does the program have? Participation has been a problem. The Environmental Protection Committee members have recently been asked to help set the example, and also to individually explain the program in the building and, as a minimum, to urge support of it within their working areas. A letter is also being prepared for the SAC Chief of Staff's signature that will more or less direct participation in the program. Other PR is being considered and the effect of all the new efforts will be evaluated.

(5) A new contract for high grade paper will be sought.

(6) Capt Uhlik recommended that MAJCOM representatives establish a program in their own Headquarters Building since "you're right there and you can get a pretty good handle on some of the problems involved in the program."

B. Refuse Derived Fuel (RDF) Attempt at Griffiss AFB - Lt Col Eugene Hanson, HQ SAC/DEVQ

1. What we tried to do is work with Griffiss AFB NY in solving a landfill availability problem of Oneida County. Oneida proposed that a joint venture be pursued by the base and the County whereby the latter would take the base's solid waste, process it to form a Refuse Derived Fuel (RDF) and sell it back to the base for use as a supplemental fuel in the base central steam boilers. (The oil-fired boilers were originally coal burning, and recent guidance directing eventual reconverting back to coal made the idea of co-firing coal and RDF attractive.) The County's proposal involved capital expenditures of about $10 million each. The County's funds would be used to construct an RDF plant for processing the base wastes, and all other solid wastes in the County.

2. Our situation was this: Griffiss has 4 boilers. For us to convert to coal and to have the BTU capability with the type coal we had, we had to install a fifth boiler in order to have one on standby all the time. Given this, we thought, well why not build an RDF boiler with the capability of burning either coal or fuel oil? There really wasn't that great of a problem that we could foresee. So we started to look into it and became more serious.

3. We computed our costs for landfill disposal to provide a baseline in that area. I believe it was in the $12-15/ton range. We also looked at similar RDF use in St Louis where they were actually paying people something like $6 a ton to come pick it up. In essence, we resembled two sides of the coin in that we were relatively inexperienced and really didn't know where we were going, but the concept sounded reasonable from an energy conservation viewpoint, and that is the way we pursued it.

4. We requested support from the Air Staff, but they said the proposal didn't satisfy the energy conservation program payback criteria of 5 years or less (we would have to have had to invest $10-12 million for the new boiler and modifications). The payback was similar to that of the County's - 10 to 20 years.

5. I think the crux that broke the back of the proposal was the long payback period, the uncertainty surrounding the possible reconversion to coal, and the fact that Griffiss really didn't have a disposal problem that would necessitate implementing a high capital project such as was being proposed.

6. Oneida County still has their landfill disposal problem, and "they are still vitally interested in pulling every string to get Griffiss going with a joint venture." The Air Force has indicated to them and to their political representative in Congress that we are willing to cooperate in such a venture if some other Federal agency (EPA, ERDA, FEA) can provide the funds necessary to support the modifications that would be needed at Griffiss.

7. Col Hanson also indicated that SAC will be conducting a survey of their other 27 bases to see if they are "viable candidates" for waste energy utilization. He also indicated that there is a general trend towards being more involved in the community and bases will have to consider participation in regional programs, particularly in energy resource recovery.

C. Camp Lejeune and other comments - Mr. Steve Howard, SCS Engrs/EPA

1. Camp Lejeune

a. I just wanted to briefly discuss the Camp Lejeune recycling program that was implemented a number of months ago, because it represents the marriage of two elements which I think represent a lot of potential within the DoD.

b. What is happening is that the base contracted through the local property disposal office with the Local Shelter Workshop for persons who are both mentally and physically handicapped, some of them pretty severely. The Workshop has set up a processing center on the base which consists of a baler and a conveyor where the corrugated is checked for contaminants, and they in turn process the corrugated and prepare it for shipment and ship it out of there in train-cargo quantities.

c. They are currently recycling over 100 tons a month from that base, collecting it from the major waste - corrugated-generating activities: the commissary, exchanges, things of this nature. Lejeune is a fairly good size base, upwards of 60 or 70 thousand working population.

d. But I think the key thing there is that the local property disposal office has worked with the base commander and CE, and these three functions have gotten together in that particular location and have developed the system for working with the community and providing a source of work for the local handicapped.

e. It is an impressive operation to say the least. They process and produce a material that is very marketable and get about $45 a ton for that corrugated. Whereas, if it was not baled and not shipped in carload quantity, it would only be worth $5 to $10 FOB Camp Lejeune.

2. Other Comments

a. EPA Source Separation Implementation Manual. This is being put together and will be available to you. It will give alot of data in terms of factors for determining what the costs are, and what manhours are required for high grade paper recovery. (See Section VIII of these Proceedings for some of the factors.)

b. Convenience is important. After listening to the SAC discussion of the paper recovery program, it brings out the point that the key to the success of any recycling program is the convenience of the system to the people who are participating in it. If it is easy for the employee to place his paper in an interim container, the chances of his participation will be far greater than if you have to get up and get across the room and deposit it in a small container. It is a small point but a very important point for gaining participation in an office recovery program.

c. Minimize Separation Categories. The other thing is that you can't ask people, particularly in an office recovery program, to separate more than one or two categories. A lot of programs have failed because they have asked people to separate into many different categories. Any time you ask people to separate into more than three categories, you are asking too much. They get confused and they don't know what is recyclable and what goes in what section. And we find that in the case of office buildings, two is about all you can ask; the hi-grades and regular trash. In residences about three is all you can ask.

d. How to increase recycled waste. A lot of the commercial programs that have been established have actually tried to increase the percentage of the waste which is being recycled through the paper recovery program. They have stopped using colored tablets, like yellow tablets, and put everything

into white high grade paper. This increases the availability of high grade paper in the waste stream that can be pulled out. I know that the civilian industries are looking at this. GSA has been assigned to investigate the possibility that instead of using yellow telephone pads, they use white memo pads which can be recycled.

D. ATC Recycling Programs - Mr. Bernard Lindenberg

1. Recycling is mainly limited to the Commissary. Two interesting experiences in this regard were described.

a. One contractor put in a baler and paid the Commissary for the cardboard recovered. When the market dropped out, however, the contractor went out of business.

b. At Lowry, the Commissary cardboard recovery is tied into the base refuse collection contract. The base contractor is also the owner of a baler placed at the Commissary. During the market downturn, ATC convinced him to leave his baler there, and the cost was picked up in the refuse collection contract. When the contractor is able to sell his cardboard, he reduces his costs in the refuse collection contract.

2. On another subject, ATC indicated that at Vance AFB solid waste collection and disposal costs about $110/ton! Vance does not generate a lot of waste, but the cost from the monthly assessment to use the sanitary landfill is very high. "It just seems big because it's (the waste) so little and we'd have to pay the same amount if we generated ten times as much."

3. ATC has no on-base landfills.

4. All but one base has contract collection.

E. MAC Recycling Programs - Mr. Wayne Caughman

1. Source Separation.

a. We kicked off the recycling program back in 1972, 1973 at McGuire and Travis Air Force Bases. We had a lot of success with the McGuire program but we had, I think, the usual problems of litter, and of people bringing up bottles, cans and newspapers and inadvertently dumping them in the wrong containers. We had a lot of policing problems. We had to continually provide publicity for the program. Then, of course, the markets dried up in 1974 and we were left with a lot of solid waste on our hands. The programs at the end of that period were then stopped.

b. Since 1974 MAC really hasn't been too involved with that type of program. Apparently the only thing we've got going is the normal tab cards, paper, some cardboard from some of the clubs and exchanges.

c. McGuire is involved in a proposal to transport their waste over to Fort Dixon for disposal in a big incinerator over there.

d. In view of the new DoD Directive 4165.60, MAC has unique opportunities for entering into joint efforts with other Army installations. For example, Pope is next to Fort Bragg; McChord is next to Fort Lewis; and McGuire is next to Fort Dixon.

e. MAC has an unusual problem with wastes from their overseas flights. Because of the potential problem with hoof and mouth disease, the U.S. Department of Agriculture requires "disposing" the paper and garbage waste from overseas in incinerators. Consequently, the new EPA Guidelines will not be applicable to these wastes.

2. Waste Heat Recovery

a. Andrews AFB

(1) MAC's involved with waste heat incinerators. We had two projects in the military construction program to install incinerators with the waste heat recovery at Andrews and at Charleston. Some of the important factors you have to consider with these energy recovery systems are:

(a) We considered several types of incinerators and when you put in an incinerator with waste heat recovery, you always have to have a back-up unit in case the main unit goes down.

(b) Another facet that you want to show is that it is cheaper to do that than to continue to burn your existing fuel, and you must also have a central heating plant, which we have at Andrews.

(c) You must be able to utilize year-round the steam that is generated.

(2) The Andrews project is rather unique in that we had some unusual problems which you would only see at Andrews, I think. For example, we wanted to locate the incinerator on Arnold Avenue which is the VIP route for all the dignitaries coming into Washington and nobody wanted it there. So we finally worked out a setting arrangement with some screening that is going to tack on about another hundred thousand dollars on the project to screen and reface the plant. We had another site chosen but we didn't have enough utilization of the steam during the summer time to warrant that location.

(3) The project is scheduled to be designed by the end of August 1977. Everyone will be looking at the Andrews incinerator to see how effective it is in saving us dollars as far as using oil, and also some of the normal problems that we expect from the incinerators, such as noise, fire potential that you always have with an incinerator, air emissions, et cetera.

Comment on air emission controls: In accordance with current Air Force policy, we will comply with the most stringent Federal, state or local standards applicable to the regions in which installations are located. This policy was spelled out in a HQ USAF/PRE letter to all MAJCOMs, dated 2 Mar 1973, subject: Air Force Responsibilities Under the Clean Air Act.

b. Charleston AFB. MAC had intended to construct a solid waste heat recovery incinerator at Charleston. However, a GAO survey indicated that the nearby Navy installation was also planning for a facility and this, plus a long payback period, combined to cancel the project.

c. Regional attempt - Scott AFB. MAC has been involved in an unusual project involving Scott AFB and the City of St Louis region. Union Electric, the big power company for St Louis, was going to install an elaborate system to burn all the waste generated by the whole city of St Louis and everybody in the greater St Louis area. Union Electric burns and is a very big user of Illinois coal. They proved that it would be very economical to burn/co-fire refuse in their coal boilers after separation. They intended to utilize four or five transfer stations to obtain waste from outlying/distant areas such as Scott AFB. But nobody wanted a transfer station in their back yards, ahd there was one continuing problem after another. Everybody was for the program, but nobody wanted to be involved in it. I guess this was typical of some of the problems we have. Two weeks ago Union Electric decided to cancel the project.

3. Other Comments - Wheeled Carts in MFH

a. Scott AFB experimented with and is using a self-contained trash container that has permanent wheels. The MFH occupant wheels it out to the curbside of the street once a week. It is then picked up by a special modification on the trucks and is automatically dumped. (The modification comes as a kit and is produced by the cart manufacturer.) The carts are used at two bases with about 1,000 and 1,500 MFH units respectively. MAC plans to install them at some of the other installations.

b. The base provides the containers. They cost from $55 to $75 apiece, and they have capacities of from 78-82 gallons.

c. Mr. Keggan commented that these carts were also tested at Robins AFB. Once a week pickup was insufficient for the quantities of waste generated. Litter became a problem and the base had to consider either going to two carts per MFH unit or to twice a week pickup. (Local/state health regulations may require twice a week pickup in order to keep the fly cycles broken. Editor's note)

d. Capt Olfenbuttel commented that use of paper bags designed for trash handling and storage may be a practical alternative for MFH waste management. A test at Kirtland AFB showed that these bags are easy to handle, strong, resistant to animal attack and insect problems, and are bio-degradable. Test results are included in AFCEC TR-76-10, Improved Efficiency for Kirtland Air Force Base Solid Waste Collection.

F. AFRCE/CR - Lt Col Mel Endicott

Col Endicott made some general remarks regarding the apparent lack of AFRCE experience in solid waste management, and the present efforts they are taking to pull together the elements and available experience needed to study the San Antonio SMSA region, where Air Force is "lead agency" for regional resource recovery.

G. ADC Recycling Programs - Mr. C. W. Lahser

1. General. We've had voluntary recycling at a number of places using Boy Scouts, different clubs on base and things like this, but none of them, to date, have done much of anything. A few of them have collected a bunch of paper and the contractor has refused to pick it up, or the bottom dropped out of the market, or something like this, and it discourages everybody. So, most of the sites are of the opinion that "it didn't work in the past so it won't work in the future," and since most of the sites are in areas of few people, we probably are not going to do any recycling as such.

2. Colorado Springs. Now, in Colorado Springs we did get together with the Air Force Academy, Peterson Field, the Chitlaw Building (HQ ADC), Fort Carson, the Post Office Department. The EPA came down and gave us all the good word on what we were supposed to do and SHADE gave the same thing we had this morning. We're trying to get a contract going right now, particularly one involving a desk top recovery system.

3. Tyndall AFB. Capt Olfenbuttel commented that at Tyndall AFB the Airman's Council, or a similar group, is considering going to their own source separation program for beverage containers. He recommended that Mr Lahser and Mr McDonald (of Tyndall) check out the proposed program before it gets very far. Since it is a voluntary program, it is almost destined for failure.

4. Other Comment - effect of weighing the refuse. As a result of the two week weighing program directed by HQ USAF, ADC has revised their conversion factor from 0.02 tons per yard to 0.37 tons per yard. (Other bases have experienced similar findings. Some bases determined their actual tonnages to be 1/3 - 2/3 less than those previously calculated using conversion factors! Editor's note)

H. PACAF Recycling Programs - Mr. Richard Okamura and Mr. Herbert Nakashima

1. Hickam AFB.

a. The NCO Association (NCOA) will sponsor a recycling program starting 26 March 1977. A number of satellite pickup points are being set up around the base, and a Recycling Center is being established adjacent to the Commissary parking lot. The Environmental Protection Committee is supporting the program with 3 dumpsters: one for newspapers; one for aluminum cans; and one for beer bottles. The NCOA also collects tin cans.

b. The program will operate with both the pickup points and the Recycling Center. If individuals bring their separated items to the Center each Saturday, the Buyer, with NCOA assistance, will weigh the items and pay the individual right on the spot. The NCOA will assist in collecting the materials deposited at the satellite stations. The Buyer will pay the NCOA a certain percentage of the revenues.

c. Presently the NCOA is receiving $0.17/lb or $340.00/ton for aluminum cans. The tin cans bring $0.01/lb; which includes soda cans, soup cans, coffee cans, or whatever.

d. Transportation is no problem. The Buyer brings his truck on base to the Recycling Center.

2. Korea.

a. PACAF has four active bases in Korea. The military has a single contract, conducted through the DPDO, that covers all the military services except for one small Army unit. It is essentially a two year sales contract (Oct 76-Sep 78) in which the contractor pays the U.S. Government $2800/month to haul away the refuse. The contractor is able to salvage and sell whatever he retrieves from the refuse. The refuse does not include waste POLs, construction and similar waste items. He does have to retrieve and return promptly any item such as tableware, kitchen utensils, et cetera. The only thing the Air Force has to provide are refuse disposal containers at the buildings and disinfectants.

b. Modus Operandi of Contractor: Apparently the contractor trucks the refuse to his off-base segregation center and dumps it there. Then womenfolk sit in a circle around the pile and manually work their way through it, picking up aluminum items and putting them in one pile, corrugated cardboard in another, and so on. As the pile starts to give out, different trucks pick up these items.

I. Overseas Waste Management and Standards Compliance - Yakota, Japan - Maj Sanpei

1. For years Yakota worked with or had Nationals collecting solid waste, taking it off base, and then burning it in a landfill or a dump. Recently, however, Japan has tightened its environmental protection and the local Prefecture indicated that the contractor would not be able to use the open dump in the future.

2. There is a scarcity of land available for waste disposal. Given this and the directive to find an alternative disposal area prompted Yakota to program a waste heat recovery incinerator in their 78 MCP. HQ USAF supported the item because the present policy with respect to overseas areas is that we will comply to host country standards. This policy, however, is not easy to apply in all cases, as indicated below.

a. We've had a lot of problems with respect to overseas and foreign country local county/Prefecture standards because DoD has taken the position that we will comply with local standards only if they meet the national standards and are enforceable upon everyone else in that area (whereas in the CONUS we have to meet the most stringent standards, be it local, state or Federal). Therefore, we have had problems in localities where the Prefecture standards were higher than the host country's national standards, or directed only at the Air Force installation.

b. Another problem the military has had overseas is allowing foreign nationals on-base for the purpose of environmental control. For example, in Japan, a mayor was interested in oil pollution and wanted to come on a local Navy base to take a look at the Navy facilities for prevention of oil pollution. Well, the Navy base Commander said, "No, you can't come on to my base." So the mayor became very upset, contracted the ministry and all, and we got a lot of questions and queries. The outcome of that was that we will follow whatever the status of forces agreement says on that issue as to whether or not we will grant access to foreign country agencies that represent environmental control. Now, if the status of forces agreement does not cover it, then it's going to be up to the senior U.S. official in that country to make a decision as to whether permitting the access of that base to those individuals is for the benefit of the Air Force and the military, and to be sure they are coming on to take a look at a specific thing that they are interested in and we feel is a valid requirement for them.

c. Presently, the DoD is working on a memorandum to get a better classification on what standards we have to comply with, and the accessing of foreign national personnel on to the installation in the interest of environmental control. It most likely will also contain a clause to the effect that if our facilities need to be upgraded to meet a foreign country standard(s), we will pay for it only if it was built and constructed by military forces with our funds. But if that facility was built by the host country for the U.S. use, and it has to be upgraded to their standards, then it is the responsibility of the host country.

3. So these are the implications that you have to go through before you can program overseas. In the case of Yakota, the local/Prefecture standards complied with national standards, and we were trying to comply with Japan's standards. However, when it went up, the OMB cut the 78 MCP drastically, and we lost many stateside projects as well as the project at Yakota. So right now, the Yakota project will probably be deferred into the 79 MCP along with Chanute's fire training facility and Grissom's heating plan as well. So that's the status concerning overseas areas.

4. Question: Will the DPDO be investigating Japanese markets for paper?

Response: (Lt Col Pyne and Maj Sanpei) - The EPA guidelines only apply to areas that EPA has jurisdiction over; that pretty much excludes foreign countries. However, yes - in foreign countries where there are markets we should be pursuing the possibility of selling. Now, I know that in Korea, if we try to pull out from the waste stream whatever we thought had significant value and tried to sell it separately, our trash contract would be raised drastically, because the trash contractor places his bid based upon what he can get out of the waste stream!

J. ANG Recycling Programs - Mr. L. W. Householder. Mr. Householder indicated that there is little activity in this area. He predicted that there is really "no great potential for the National Guard" in resource recovery because they don't have many people, and they are scattered throughout the country.

K. AFLC Recycling Programs - Mr. Robert Keggan

1. General. AFLC generates a very large quantity of scrap from their industrial operations, which produces scrap sales of millions of dollars per year. However, none of the bases have "come up with real programs that amount to anything" of the source separation type under discussion. Robins AFB does have a program, with a history and description as follows.

a. In 1975, Robins sent a proposal to HQ AFLC proposing recycling of computer products, glass and aluminum. The Junior Officers' Council and the Enlisted Advisory Council were to jointly sponsor a project designed to consolidate all discarded computer listings and computer punch cards into special bins for collection and subsequent transfer to the DPDO. Publicity was also a responsibility of these two Councils.

b. Aluminum cans, amber glass and clear glass were to be collected from the Clubs.

c. The MFH occupants were also requested to separate out anything 100% aluminum, clear glass, amber glass and green glass. These items were then to be deposited by the occupants in specially designated containers (renovated Lodal-Dumpster containers) located in five "recycling centers" around the housing area.

d. HQ AFLC believed that the proposed program was uneconomical. However, before they could respond with this finding, the Robins Air Logistics Center (ALC) Commander directed its implementation.

e. "The program has not really been successful" because of problems such as obtaining a glass buyer (too distant to make it economical); cans didn't turn out to be 100% aluminum, with the result that half the time they had to take them down to the dump; and participation was poor. The program is still going on, although I don't know what the present returns are."

2. Refuse Derived Fuel (RDF) Firing Test at WPAFB

a. AFLC conducted an RDF feasibility test burn at WPAFB in 1975. WPAFB has 5 coal-fired high temperature heating plants. The RDF was experimentally provided by the Black-Clawson resource recovery plant in Franklin OH.

b. The conclusions of this test were basically as follows:

(1) Co-firing the RDF and coal is feasible. Firing a 1:1 RDF/coal mix (by volume) caused no significant problems.

(2) Stack emission tests generally showed a beneficial effect on the environment. Sulfur oxide and hydrocarbon showed decreases over emissions from coal-only firing.

(3) Refractory deposits formed during the test were considered controllable and not expected to be harmful to boiler operation.

(4) A potential long term problem with boiler tube scaling/corrosion needs to be evaluated further. There was no short term damage.

c. The main problem with implementing an RDF-coal firing system operation is the inability to enter into long term (greater than 5 years) contracts for the RDF. In order to meet the potential RDF demand by WPAFB, Black-Clawson would have to put out a large capital investment and, as a result, needs to have a 10-year contract in order to justify the investment. Unfortunately, present ASPRs do not allow such long term contracts; the maximum term contract allowed is defense fuels-one year with renewable options up to 5 years.

(1) Recently, Mr. Keggan received word that DoD has written into one of the bills of appropriations or authorization bill adequate words that will give DoD the contract authority to get in a long term contract, such as 10 years, for purchase of RDF, and back haul, if necessary, of the refuse. In other words not only contracting for purchase of fuel but also authority to contract or get rid of the trash back through the firm producing the RDF, if it is economically feasible.

(2) He also indicated that the Commander of AFLC, General Rogers, had personally signed out a letter to Mr. Schlesinger for assistance in overcoming this problem.

(3) Maj Sanpei commented that a military authorization bill was used as a vehicle for obtaining legislative authority to receive recycling proceeds and use them for recycling costs reimbursement, environmental improvement and energy conservation efforts.

3. Other recycling.

a. Although AFLC does not conduct source separation on a significant scale, they do have programs to take care of things like wastepaper trimmings from printing plants. They also generate significant quantities of computer paper and cards, and these are "pretty well recovered."

b. Scrap wood.

(1) AFLC generates many, many tons of scrap wood, the handling of which probably exceeds solid waste hauling on most other bases. They've tried many ways of recovering it, but they and the DPDOs have "basically given up because it cost more than it returned." Examples are given in following paragraphs.

(2) At WPAFB:

(a) WPAFB used to put it in a big hole and once a week the DPDO would send an employee over there to sell it at $0.50/car load, $1.00/trailer, et cetera. The sales didn't cover his wages! They also had fire hazard problems; every once in a while the pile would catch on fire.

(b) This operation was finally stopped. They then brought the wood to the landfill where they gave it away. The Judge Advocate subsequently indicated that if it belongs to the Government and somebody wants it, then it's Government property and must be sold, not given away. Two bases, including WPAFB, continued to give it away, however, because it was not worthwhile trying to sell it and uneconomical to do so.

(c) This giveaway operation was subsequently stopped because of an IG writeup and interference with the landfill operation. They intended to just dump it at the landfill and cover it up without any recovery.

(d) The dump-and-forget scheme, however, ran into complaints from people who claimed it should be recovered, and who formed a volunteer group to process it at the landfill. The volunteers didn't last long and a Lt Col, who was leading the group, ended up trying to run it himself.

(e) End result: the operation received another IG writeup and was finally closed!

(3) McClellan AFB:

(a) McClellan has had a history similar to WPAFB. Civil Engineering used to place the wood in a special, fenced location.

1 Once a week, on a Friday, DPDO would sell whatever they could to whoever wanted to get the choice of the scrap.

2 On Saturday, the area was opened up to whoever wanted to come and, free of charge, carry off anything they wanted.

3 On Monday, the base paid a separate contractor $6/ton to haul away the remaining scrap wood, which represented anywhere from 70 - 75% of the original pile.

(b) McClellan continued this operation until they determined that they could direct-haul it to the transfer station for disposal at $5/ton. They could thus save $1/ton, plus the other costs incurred for handling it at the recovery area.

(c) Thereafter, however, somebody complained to the IG about this method. So, after a year of trying, McClellan finally obtained a sales contract for $2/ton. The only problem was that Civil Engineering had to collect it from all over the base and put it in one holding area. Then they had to run over it with a bulldozer to break it up and then use a front-end loader to load it on to the contractor's truck. This meant that (1) the DPDO received $2/ton, (2) the base Civil Engineer received nothing, and (3) it cost the base Civil Engineer about $50/ton, for a net loss of $48/ton!

(d) Consequently, the program was terminated and the wood scrap was directly hauled to the transfer station for $5/ton!

c. High-technology resource recovery. The state-of-the-art is such that costs and typical base solid waste tonnages will not make high technology resources recovery cost-paying operations.

3. Other Comments

a. Of the 6 largest ALCs, it appears that 5 will go to contract collection and disposal. The AFR 26-1 studies provide the basis for this action.

b. Most ALCs do not use or are going to terminate Air Force operated landfills, and use city or county landfills.

L. AU Recycling Programs - Mr. Ralph Stanford

Mr. Stanford indicated that AU has two commissaries that sell recyclable paper to a contractor for 51.5% of the market value of the paper. The Base Exchange at Maxwell also sells paper that is compacted before sale. At Gunter recycling involves computer paper and tab cards from the Data Design Center, and paper from the Printing plant. He also discussed difficulty in getting rid of waste oils, which is briefly discussed in the following section.

M. Waste Oils - Energy Recovery and Waste Exchanges - Capt Olfenbuttel

1. Many MAJCOM representatives expressed problems in disposing of their waste POLs (petroleum, oils, lubricants) at some of their installations. The major problem seems to reside with the small quantities produced over a year's time and the subsequent inability to obtain a buyer for the waste oils because it is uneconomical for buyers to deal with them. Solutions may be to give it away to small business "scavengers" (if DPDO can't get bids) listed in the telephone Yellow Pages; attempt to find user for it through Waste Exchanges; co-fire it in oil or natural gas fired steam boilers (economically applicable to large quantities of waste POLs).

2. Per request of the representatives, the following known established or developing Waste Exchanges are listed. These Waste Exchanges provide an opportunity for waste generators and waste users to list their "Items Available" and "Items Wanted" and in a form which protects their identity. Inquires are forwarded to the firm which made the listing. Any future actions, including terms and conditions of a sales agreement, are left between the inquiring parties.

a. St Louis Industrial Waste Exchange

(1) Address: Roland C. Marquat
St Louis Regional Commerce & Growth Association
10 Broadway
St Louis MO 63012

(2) Frequency of Listing: quarterly, in Jan, Apr, Jul and Oct.

(3) Cost: $5.00 per entry.

(4) Telephone: 314-231-5555, ext 41 (can use AUTOVON 693-1000/1110, ask for off-base official).

b. Iowa Industrial Waste Information Exchange

(1) Address: Iowa State University
Ames Iowa 50011

(2) Frequency of Listing: unknown

(3) Cost: free services

c. Houston Industrial Waste Exchange

(1) Address: Chamber of Commerce
Houston, Texas 77002

(2) Frequency of Listing: monthly

(3) Cost:

(a) Annual registration fee: $10.00

(b) Annual subscription charge: $15.00

d. Tennessee Waste Exchange

(1) Address: Division of Solid Waste Management
ATTN: Mr. Jerry Loftin
Tennessee Department of Public Health
Suite 320
301 Seventh Avenue, North
Nashville, Tennessee 37219

(2) Frequency of Listing: unknown

(3) Cost: free services (?)

(4) Telephone: 615-741-3424

e. Georgia Waste Exchange

(1) Address: Room 804
270 Washington Street, Southwest
Atlanta, Georgia 30334

(2) Frequency of Listing: unknown

(3) Cost: unknown

3. For those installations with large quantities of waste POLs, co-firing in oil or natural gas boilers may be applicable. Reference:

a. T.O. 42B-1-23, dated 15 Feb 77, "Disposal of Waste Liquid Fuels and Other Petroleum Products."

b. AFCEC TR-76-2, Waste POL Disposal Through Energy Recovery, available through Defense Documentation Center (DDC).

N. AFCS Recycling Programs - Capt George Franklin

1. Air Force Communications Service mainly has sites on other installations. In other words, we're tenants, except for Richards-Gebaur, which is our only base and we may not be there too long. As far as solid waste recycling on base right now, Boy Scouts conduct paper drives and that is about the extent of that. The Commissary, Exchanges ... recycle the cardboard. About the only thing left is your high grade paper and we will probably start an effort in that way to see if we have a market for it and if it is economical.

2. As I found out we're not a lead agency; it is one of the other Federal agencies in Kansas City. So, I think the opportunity exists there to combine with other agencies like the Marine Corps Finance Center and GSA downtown. They're in close proximity to us, so that's an open option.

O. AFRES Recycling Programs - Mr. K. Stuart Milland

Mr. Milland indicated that many of the things expressed by the other MAJCOMs were true of AFRES. He did offer some practical recommendations that may make your recycling program more feasible and noteworthy.

1. If your feasibility study indicates the need for a baler (for example, because of storage space limitations), or similar pieces of equipment, check (through DPDO) to see whether potential buyers will provide this to you; if they can, this will save on your capital expenses (*similar to ATC's arrangements, as described in Section XI D*).

2. Also, check (through DPDO) to see if potential buyers will pick up the items on base, thereby avoiding additional transportation requirements and costs.

3. Request DPDO to keep and give you a list of contacts they've made in the local area when researching the marketing of the potentially recoverable items. This will prove useful when briefing the Base Commander on the status of the program and on the capability of the local community to support the base source separation program.

P. USAFSS Recycling Programs - Mr. John Hale

1. Overseas. The Security Service has similar situations to those described (Section XI H2) in Korea. For example, in Karamursel, Turkey, the base collects and takes the waste downtown to a designated area and unloads it at no charge. People living around this area are apparently assigned certain items to pull out of the waste pile for sale. Any attempt at large scale recycling on-base would most likely adversely affect the present "fine situation" for managing the solid waste. The biggest overseas installation is in Japan, where USAFSS is hopeful of finding interest in a paper recycling program.

2. Goodfellow AFB. The only stateside USAFSS installation is Goodfellow AFB TX. They apparently have no market or have been unable to find a market for cardboard. The Commissary and Base Exchange bale their paper and send it to the landfill! Mr. Hale is going to investigate the possibility of building up railroad-car size recycled paper quantities and selling them as an alternative to present landfill disposal.

Q. AFSC Recycling Programs - Mr. Martin Noland

1. Kirtland AFB.

a. Kirtland initiated a recycling program in 1972 as part of the Air Force six months trial run recycling effort. They utilize a central deposit/pickup point where people deposit bottles, steel cans, aluminum cans and newspapers. Its performance has varied up and down, but it continues. Problems occurred with litter and the base Civil Engineer had to put a fence around the area. Other problems involve stealing of newspapers and occasional contamination with garbage accidentally dropped in with the recycled items.

b. Aluminum is donated to the Animal Humane Society, which picks up the cans with their own resources.

c. The DPDO has contracts for base computer paper and tab cards, mixed bond and newspaper. The contract includes contractor transport of donated glass and steel cans to Keep New Mexico Beautiful (another nonprofit organization). The contract terms vary between 6 months up to a year. The price required for paper is a fixed amount, rather than related to a percentage of the Chicago Board of Trade.

d. Office waste paper is collected on a voluntary basis. People fill up cardboard boxes, which are then stored for a period of time. Volunteers then pick up the stored wastepaper and, using their own resources, transport it to the DPDO.

e. In 1976, they recovered 21 tons of computer tab cards and received $172/ton; they recovered 16 tons of computer paper at $46/ton; and 48 tons of mixed bond was recovered at $10/ton! From the MFH area (approximately 2400 units) they recovered 3½ ton/mo. of glass; 1 ton/mo of steel cans; and 1½ ton/mo. of newspapers.

2. Hanscom AFB

It has a small program. The Officers' Wives Club and the Boy Scouts assist.

3. Brooks AFB

"Brooks AFB had a real active program going. They collected the paper at the desk and brought it outside to a general collection point. They were doing pretty good except finally they got a little bit too much red tape in the way in which they had to package it and send it over to Kelly AFB, so they dropped out of the program at that point."

4. HQ AFSC

a. "HQ AFSC had an energetic Capt Depeitri who worked in the computer section and hated to see all that paper go to waste. So he started recycling on his own. He took the boxes the paper came in and passed it out to anyone that would participate; and he collected these boxes and stored them in the building. Our Directorate (DEI) joined them, as did a few of the others. It was going pretty good."

b. "We tried to get out of the volunteer bit by getting the custodial contractor to take the separated paper down to the storage point at the bottom of the building. He agreed and this worked great. Unfortunately, the contractor was on a 90 day contract and didn't get the new contract. The base didn't follow through with provisions in the new contract to provide this service."

c. "Capt Depeitri left and the program ended. The local paper buyer was willing to put a container outside our building if we could just get it into the custodian contract. We couldn't and therefore we are losing quite a bit of paper. That's the disadvantage of being a tenant on a base: You can't force the host to do what you think should be done."

5. Other Comments - Transfer Stations

Mr. Noland briefly described the solid waste transfer station used on Patrick AFB. Other participants mentioned transfer station use or proposals, such as at Hill AFB and Tyndall AFB. Mr. Keggan emphasized that transfer vehicles can only be purchased with vehicle procurement money which is specifically authorized by Congress, by end item nomenclature, stock number, and number of vehicles. Sudden requirements for these vehicles means that decisions will have to be made by the Air Force as to whether somebody else's Priority 1 vehicle will not be purchased in order to fulfill your request; there is basically no vehicle money available for new requirements. If Air Force decides to maintain planned priority procurements, you'll probably not get your vehicle and have to plan for it in the future vehicle procurement program.

R. Importance of Convenience and Non-Volunteer Support for Source Separation - Mr. Keggan, Capt Olfenbuttel

1. Mr. Keggan described the situation in the Dayton-Centerville OH area in which most recycling centers have closed down due to poor markets and

lost monies, pilfering and disinterest. Once the publicity fell off, people decided it was easier to throw their cans away rather than driving down to the recycling centers (recycling was, therefore, an inconvenience).

2. In his studies, Capt Olfenbuttel indicated that there are a few things that can easily defeat an effective recycling program, similar to the factors that Mr. Keggan commented on:

a. If people have to travel to deliver their separated items, their interest runs out after awhile, except for those few who are really dedicated. This means that you have to make it convenient for people to participate, and that is why we advocate curbside service for MFH areas.

b. If you have volunteers running the program, frequently they experience a similar drop off in motivation. Some undesirable results of this behavior are increasingly sloppy recycling centers, with less frequent movement of deposited items. This, of course, provides further disincentives to people who are bringing in their recovered items. Therefore, we advocate providing monetary incentives to personnel collecting, processing and handling items in the program (reference the discussion on financial incentives for the Boy Scouts at Vandenberg AFB, Section VIII P).

XII. Joint Service Solid Waste Management Pamphlet - Maj Sanpei

A. The Navy is currently putting it together. It will replace AFM 91-11.

B. Why a Pamphlet? Air Force Civil Engineering has an overall objective to do away with command supplements and to do away with manuals. The reason for that is that they've found that the IG in his inspection of base Civil Engineering organizations can always pick up any regulation, any manual, any command supplement and he can gig that Civil Engineer for not complying to the manual, because manuals are directive in nature. So, there is an overall objective within PRE to do away with manuals and not tie the Command's hands down. Therefore, as a pamphlet, it's not fully directive by nature; it gives you guidance, it gives you guidelines, but you can't be gigged for everything that's in there.

XIII. Recycling and the Thomas D. White Award - Maj Sanpei

A. Those booklets are going to be due the 15th of March, and we'll be reviewing them then. I'd like to emphasize that everything we've talked about in the Solid Waste area should have some mention of it in your brochure.

B. There are two awards: One is for natural resources and the other is for environmental protection. On environmental protection, the people who work with environmental protection should be assisting in putting that

brochure together. Many times in the command, the guys that put the brochures together are in the natural resources area. That shouldn't be, because you have a separate environmental protection award and that part of it should be looked at by the environmental protection people. At the Air Staff we have a natural resources section, as well as an environmental policy section which will be reviewing the environmental quality part of it.

XIV. Follow-on HQ USAF Support - Maj Sanpei

After you go through the efforts of the economic analysis and we've identified which major bases are the ones that we will probably go ahead and implement, we will try to send a letter out from our Chief's office down to your CV's office telling him and asking him again for his support through his base commanders for the bases that preliminary feasibility analysis indicate a potential for undergoing a source separation program; trying therefore, to get you the additional support that you might need in getting a program started.

XV. Courses in Resource Recovery and Recycling - Capt Olfenbuttel

The following course in Resource Recovery was identified to Capt Olfenbuttel, subsequent to the Workshop. It may prove beneficial to USAF managers. It is designed to supplement Environmental Management Courses.

Course: Resource Recovery and Recycling Course (ALMC-RC)

Modes and Duration: Resident, 1 week

Scope: Highlights the installation solid waste pollution problem and emphasizes possible solutions using current recovery/recycling developments. The socioeconomic, technical energy conservation, and environmental considerations which make resource recovery attractive are explored.

Location: US Army Logistics Management Center
Fort Lee, Virginia 23801

Contacts: Mr. Arthur F. Levenstein (Instructor), DRXMC-MR-I, AUTOVON 687-4774/2323
Miss Moore, Registration, AUTOVON 687-2177.

XVI. Bird Strikes and Garbage - Capt Mike Harrison

Had there been a garbage dump or sanitary landfill at Kitty Hawk where Orville and Wilbur Wright took their first flight in 1903, the course of aviation history may well have been changed. Those of us who frequent dumps and landfills recognize that they attract birds, but few operators and engineers realize that these same birds which feed on garbage also hit airplanes. The first recorded fatal encounter between an airplane and a

bird in the United States occurred in San Diego in 1912, when Cal Rodgers, an aviator of some renown, hit a gull, killing the bird and himself.

During the early years of aviation history, we were not plagued with severe bird strike problems. However, the coming of the jet age, and the greater speed and problems with engine ingestions, resulted in a sudden increase in damage and loss of aircraft and lives. In the Air Force, nine aircrew members and 18 aircraft have been lost due to bird strikes over the last 11 years. Dollar losses since 1966 have exceeded 85 million dollars, not including labor costs for repairs. Worldwide, annual losses due to bird strikes may well exceed one billion dollars, based on estimates provided by the Civil Aviation Authority of the United Kingdom (Thorpe, 1976).

How important is garbage, and what role does a dump or landfill play in the bird strike problem? Garbage attracts large numbers of birds which are potentially hazardous to aircraft. These birds will scavenge for food and use the open areas of the garbage disposal site for resting areas between feedings. Omnivorous birds such as gulls are especially attracted to refuse collection sites. These large birds are often found soaring over the refuse sites between feedings, increasing the risk of bird strikes. Other birds which are frequently found feeding on garbage include crows, Starlings, grackles and several species of blackbirds.

Dumps and landfills have been the indirect cause of several major accidents involving bird strikes. A crash of an Eastern Airlines Lockheed Electra in 1960 killed 62 people while trying to land at Logan International Airport. The aircraft ingested birds which frequently fed at a landfill near the airport, lost power and crashed (Thorpe, 1973). A Learjet crashed in 1973, killing eight people at Peachtree-DeKalb Airport near Atlanta GA. In this accident, Brown-headed Cowbirds flying from a landfill on the airfield were blamed for the accident (NTSB, 1973).

A bird strike occurred on 12 November 1975 at J. F. Kennedy Airport, New York, when an Overseas National DC-10 was totally destroyed on takeoff. The New York Port Authority operates two large landfill operations near the airport. One landfill, the Dunsmere site, attracts large numbers of gulls which, after feeding, fly to the airport and loaf on the runways, taxiways and on the grass adjacent to the runways. On takeoff the DC-10 ingested gulls into its number three engine, the engine disintegrated and the aircraft caught fire. The takeoff was aborted, and the aircraft was totally destroyed. Thirteen dead gulls were found on the runway. The cost of the accident will exceed $25 million (NTSB, 1976).

The problem of refuse collection sites, birds and bird strikes is one of proximity to the airport. Historically, landfills and dumps have been located near airports because airports were located away from the

community and usually had good roads connecting the community with the airport. The land around the airport was owned by the community, so remoteness, good access and land ownership logically dictated that the community refuse site be located on or near the airport. The same logic has been used on military airfields. Landfills are traditionally located on perimeter roads on the opposite side of the runway from the main base, often very close to the runway.

When refuse sites are located close to runways, the risk from bird strikes increases sharply. In 1971, the Environmental Protection Agency surveyed 32 airfields with serious bird strike problems and 105 refuse sites near these airports. Seventy-three percent of the landfills surveyed could be classified as open dumps and were operated improperly. In every case where the landfills or dumps were closed, a significant decrease in bird strikes was noted (Davidson, 1971). At most disposal sites, improper refuse disposal operations and lack of awareness of the bird/aircraft hazard were noted.

Awareness of the problem by state and local officials and sanitary engineers is necessary. Without an understanding of the bird strike hazard, considerable difficulties are encountered when a disposal site must be closed or modified to reduce the risk from bird strikes. Locating new disposal sites creates similar problems unless engineers are aware that their planning may result in an air tragedy. How close to an airport should a landfill be located, and what parameters must be considered when selecting a site? These questions, in many cases, can only be answered by a competent biologist who is familiar with the birds and the bird strike problem.

However, guidelines do exist which can assist in locating a new land disposal site or in identifying the need to phase out and close an existing site. The International Civil Aviation Organization (ICAO) identified the following criterion:

> "Garbage disposal dumps should not be located within 13 km (8 miles) of the airport reference point." (ICAO, 1975)

The Federal Aviation Administration (FAA) has published Order 5200.5 which states:

> ". . . all landfills within 10,000 feet of any runway used or planned to be used by a turbojet aircraft, or within 5,000 feet by piston type aircraft, to be incompatible with airport operations, and therefore must be closed or prohibited." (FAA, 1974)

The Environmental Protection Agency (EPA) provides for a broad interpretation requiring identification of the hazards:

> "The site should not be located in an area where the attraction of birds would pose a hazard to low-flying aircraft." (EPA, 1974)

In a 7 Feb 75 letter from the Office of Solid Waste Management Programs (EPA/OSWMP) the EPA clarified their position in support of the FAA Order:

> "1. In cases where disposal operations are in existence and do not meet EPA/OSWMP standards. . . OSWMP will support FAA in closing down of those operations. Conversely, in cases where disposal operations do meet OSWMP guidelines and scrutiny, OSWMP will support continuance of operations that minimize bird attractions and recommend to the FAA that a waiver be granted.
>
> 2. In cases where disposal operations are only in the planning stage and no commitments of resources have yet been made, OSWMP is inclined to support the FAA position, and will advise that all potential problems be avoided and that other disposal sites outside of the 10,000 and 5,000 feet area be found.
>
> 3. However, in cases where disposal operations are in a planning or site-acquisition phase and where some irretrievable investment has already been made, OSWMP will examine every aspect of the proposed operations and make a determination as to whether or not it will support the continuance of the planning and recommend to the FAA that a waiver be granted." (EPA, 1975)

These policy statements can assist in reducing the bird/aircraft strike hazard caused by waste disposal operations. If the solid waste manager is aware of the potential problems when garbage, birds and airplanes are brought together in close proximity, he can use effective planning and management.

The solid waste manager, engineer or regulatory agency can assist in reducing the risk of bird strikes by utilizing the following guidelines:

1. Insure that strict standards for land disposal of waste are enforced.

2. Monitor contract operations to insure compliance with contract requirements for waste disposal.

3. Where landfills are creating a definite bird strike hazard, examine alternate locations or means of solid waste disposal, working toward closing the landfill as soon as possible.

into special bins for collection and subsequent transfer to the DPDO. Publicity was also a responsibility of these two Councils.

4. Consider bird strike hazards in reviewing existing and new operations prior to expansion or new site selection.

5. Increase operator awareness of the bird strike hazard to insure effective and efficient operation of the landfill.

6. Develop necessary plans for immediate closure of a site, should a serious risk develop, or plan for initiation of an interim bird control program.

Remember that garbage, birds and airplanes combine to form a potentially disastrous situation. Adequate planning and solid waste management by design and supervisory personnel can insure that this risk is minimized when disposal sites are located near airfields.

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8. US National Transportation Safety Board, 1973. Aircraft Accident Report, Machinery Buyers Corporation, Learjet Model 24, N 454 RN, Atlanta, GA, Feb 26, 1973, National Transportation Board, Washington, DC, Report NTSB-AAR-73-13, 9 pp.

9. US National Transportation Board, 1976. Aircraft Accident Report, Overseas National Airways, Inc. Douglas DC-10-30, N 1032F, John F. Kennedy International Airport, Jamaica, New York, November 12, 1975, National Transportation Board, Washington DC Report NTSB-AAR-73-13, 9 pp.

recovery.

XVII. New Table of Allowances & Equipment Utilization Discussions - Maj Roger Clarke, AFCEC/DO

Following are edited comments, organized by subject matter, made by Maj Clarke during the Workshop.

A. Equipment Acquisition Program - how do we get equipment in the Air Force and how the Civil Engineering Center gets involved in it.

1. Table of Allowance (TA) 010 lists the stock numbers, nomenclature and the basis of issue for all equipment from fire trucks to armored vehicles. It, of course, includes the standard line of collection equipment, and it gives you a standard basis of issue - how many of what you can have to do the job. That's an allowance - it is not an authorization - and we have to differentiate between an allowance and authorization. Once the TA says you are allowed to have so many refuse trucks for a certain size base, then you have to go in for an authorization. This is done on an Air Force Form 1374, and it's submitted by the Base Civil Engineer to the Transportation Operation Officer. This is done at base level. The Form 1374 is taken before the Vehicle Authorization Utilization Board (VAUB) for local base approval.

2. Your Civil Engineer, and I mean the BCE himself - not some sergeant out at the shop - should be attending the Vehicle Authorization Utilization Board. I stress the BCE himself for the simple reason that he's competing for vehicles with other full colonels on the base, and if you send a staff sergeant up to compete with full colonels, you know who's going to lose.

3. If the Board approves a particular piece of equipment, then the transportation people will submit a Form 601B to the Base Equipment Management Office (BEMO) and this is where the authorization comes in. It's actually the transportation officer that is obtaining the authorization for the vehicle. The 601B then goes up to the Major Air Command concerned where a 601A is generated. We find that in some of the Major Air Commands the Civil Engineering side of the house is not aware of the transaction - they don't know that the BEMO is passing judgment on a piece of equipment for the Base Civil Engineer. In many cases the request dies at the MAJCOM and the Command Civil Engineer never has an opportunity to lend his support.

4. If the authorization gets through the Major Air Command, it is forwarded on to Warner Robins Air Logistics Center and is entered into their big computer system up there. Each equipment item in the system is assigned to an item manager who decides when a piece of equipment is going to be programmed for purchase.

5. Once a year they have the item managers get together in a week-long vehicle buy/budget review. It was here that the item manager presents requirements for the current year buy program as well as the following year budget. AFCEC represents the Civil Engineering functional area at the vehicle buy/budget review. The key elements here are: the justification on the 1374 which is carried on the 601B which is put on to the 601A; Base Civil Engineer sitting on the Vehicle Authorization Utilization Board; the Command DE's equipment people knowing what is going on in the Command Equipment office; and, of course, we, down here at the Center, knowing what to support at the vehicle buy/budget review.

B. Equipment Replacement

1. How do we get equipment replaced once it is worn out? This is generally done on a basis of miles or hours or months and years time that we've had the equipment. It is very important that vehicle condition codes be correctly applied. They are applied by the vehicle operations, but unfortunately, the Civil Engineer - the guy that uses the vehicle - doesn't have an opportunity to comment on its condition. Quite often, it's just a computer computation and bears no relationship to the actual condition of the vehicle. The replacement code is used almost exclusively to determine when the equipment is to be replaced. The Base Civil Engineer should be aware of the condition code on each of his vehicles and agree with it or take action to get it corrected.

C. Refuse Collection Vehicles Buys

1. Real Need? One of the reasons that I have gotten excited about this whole thing in the last few weeks since the buy/budget review is that we had a buy of the front-loading refuse trucks total about 1.4 million dollars; 25 vehicles and nobody wants them! We're in the process now of trying to revalidate through civil engineering channels as well as through the item manager channel, the real requirement for refuse vehicles. We think we're going to save a bunch of money this year by simply not buying these vehicles. I'm also concerned that we are not getting the vehicle - the exact vehicle we want in the system for those bases where we are running our own refuse collection.

2. Vehicle Acquisition vs. Contract

a. My other concern, of course, is that we are buying refuse collection vehicles and then we're turning right around and going contract. I think that this whole contract business is going to cost us a lot of money as far as vehicles are concerned. Government furnished equipment is not the way to go because it puts us in the business of maintaining the equipment, and when the equipment breaks down, and we can't get it fixed, the contractor has a legitimate reason for nonperformance.

b. Personally, I think that the short term contract is one of the major reasons that refuse collection is costing us so much money. If we could go to five year contracts, we'd get a whole lot better price on it because the contractor can amortize his equipment over the whole five years. In family housing you can go to five years. Believe it or not there are a lot of bases that don't do that. Procurement officers for one reason or another are reluctant to let a long term contract in housing. If you can tie the contract in housing with the contract on the base he is assured of having at least part of the base for the full five years. Then it gives him some assurance that he's going to be around - that he's going to be working for five years.

D. Containers. I've tried to get somebody interested in testing polyethylene cans. I personally think that we would be money ahead to go with them because they don't rust out. You don't have to paint them because the color is molded in. They only cost about a third as much as a regular four yard can.

E. Transfer Equipment & Sanitary Landfill

1. Transfer Trailers. There are long haul semi-trailers stock-listed for long haul operations.

2. Landfill Compactors. Are you all aware that we have changed the basic vehicle for landfill operation to a loader-compactor? It used to be a bulldozer and/or track loader and we converted the TA so that it shows a landfill compactor. A loader compactor basically is an articulated front loader with a special bucket and steel compaction wheels. We have five in the inventory from a test that was run several years ago. We tested a shredder and a compactor. The shredder just didn't prove out; nobody wanted it. The loader compactor is a good piece of equipment and it is now in inventory in TA 010, stock number 3805-00-192-0729.

3. Landfill Excavation Equipment. One of the solutions for landfill ditch digging is something that we do not have in the inventory and that's a self-loading scraper. They come in small, like 8 cubic yards, packages. You have to remember, though, that different types of soil require different equipment. It's something that all of the bases should start thinking about if they're going to continue landfill operations. We can get a piece of equipment that is tailored to digging a trench on your base, if you'd tell us what it is. We can get you any kind of refuse collection equipment that you need tailored to your base if you tell us what it is and give us justification.

F. Street Sweepers. The Air Force has tested a street sweeper for use on the runway. It costs about $10,000 less than the one we've been buying for the past 25 years. What we're planning to do is have a multi-use sweeper. It's pure vacuum but it has gutter brooms on each side and dual steering.

You can use the same sweeper on the flightline that you use on the streets. What we think we can get is an overall net reduction in the number of sweepers on a base. Where we have three runway sweepers and three street sweepers, we think we can get by with four multi-use sweepers.

G. Sewer Cleaners

1. If you check the TA, you'll see now that the sewer cleaner truck B01 has a note that refers you to the manhole cleaner; and at every base where you have a sewer cleaner, either truck or trailer sewer cleaner, you should also have a manhole cleaner. That manhole cleaner will do a lot of jobs that you're now contracting. It will clean septic tanks, it will clean grease traps, it will clean manholes.

2. The sewer cleaner truck with a vacuum on the back end of it has high pressure water there and a little hand-held cleaner and you can knock grease off the top edge and pick it up a whole lot better than just pulling the grease out. The advantage of the pure vacuum, too, is that you can pull the grease off the top - you don't have to stick the hose down into it. The grease is floating right on the top.

3. We had the Meyers Sherman Vactor Model 810 up at Warner Robins the last week in January and it just so happened that they had a sewer plugged up in a housing area. The base people had been working on it for about an hour and a half with their roto-rooter. So we loaded up the truck with water out of the fire hydrant and pulled it up into where this manhole was. It took exactly two minutes from the time we started to unreel that hose until we had the water going through that sewer. Then we proceeded to go take the hose and run it 600 feet up the sewer and clean out the whole line.

4. What's the price of the sewer cleaner? The Meyer Sherman 810, which has a thousand gallons of water and 8 cubic yard receptacle on the back, lists for about $51,000 or $52,000. Now that is not necessarily what we would have to pay. I have sent out a letter to all of the Major Air Commands, and Warner Robins, and proposed that they look at the single unit along with the separate sewer cleaner/manhole cleaner.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

REPLY TO ATTN OF: PREV

15 APR 1977

SUBJECT: Compliance Report RCS: DD-I&L(A&AR) 1435, EPA Solid Waste Guidelines Thermal Processing and Land Disposal

TO: ALMAJCOM/DE HQ AFRES/DE HQ USAFA/DE HQ AU/LGD

1. Reference is made to your command's submittal of EPA Solid Waste Management Guidelines Compliance Survey of Federal Activities, June 1976.

2. EPA has evaluated your survey forms for bases operating sanitary landfills and has determined that the bases on the attached list may be out of compliance with mandatory provisions of EPA solid waste guidelines on thermal processing and land disposal. To foster compliance with the guidelines, EPA has made its regional offices responsible to monitor overall compliance of Federal installations in the regions. The regional offices have received copies of the survey results.

3. Request you review your sanitary landfill procedures to insure their compliance with the guidelines. Also request you submit the status of corrective actions RCS: DD-I&L(A&AR) 1435, Attachment 2, not later than 30 May 1977.

FOR THE CHIEF OF STAFF

LUIS F. DOMINGUEZ, Colonel, USAF
Chief, Environmental Planning Division
Directorate of Engineering & Services

2 Atch
1. List of AF Landfills Out of Compliance
2. RCS: DD-I&L(A&AR) 1435 Format

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

APPENDIX A

AF SANITARY LANDFILLS

POTENTIALLY OUT OF COMPLIANCE

WITH EPA LANDFILL GUIDELINES

	Reason for Non-Compliance			
SAC	**AIR**	**WATER**	**COVER**	**OTHER**
Vandenberg AFB, CA				x
Castle AFB, CA		x	x	x
Davis Monthan, AZ				x
Loring AFB, ME				x
Wurtsmith AFB, MI				x
Kincheloe AFB, MI			x	x
Rickenbacker AFB, OH		x		x
Barksdale AFB, LA				x
Blytheville AFB, AR				x
FE Warren AFB, WY				x
Ellsworth AFB, SD		x		
Minot AFB, ND				x
Grand Forks AFB, ND		x		
TAC				
Cannon AFB, NM				x
Moody AFB, GA				x
Hurlburt Field, FL		x		
Langley AFB, VA		x		
Shaw AFB, SC		x		x
Seymour Johnson AFB, NC		x		x
MacDill AFB, FL		x		
Bergstrom AFB, TX				x
Holloman AFB, NM				x
Nellis AFB, NV				x
Indian Springs, NV				x
AFSC				
AEDC, TN		x		
Eglin AFB, FL		x		
Brooks AFB, TX				x
ANG				
Selfridge AFB, MI		x		

	Reason for Non-Compliance			
AFA	AIR	WATER	COVER	OTHER
Air Force Academy, CO				x
ADCOM				
Tyndall AFB, FL		x		x
MAC				
Norton AFB, CA				x
AU				
Gunter AFB, AL				x
AFRES				
Dobbins AFB, GA			x	x
AFLC				
Robins AFB, GA		x	x	
Wright-Patterson AFB, OH		x		
Tinker AFB, OK		x		x
AFSS				
Goodfellow AFB, TX				x
AAC				
Galena AFS			x	x
Eielson AFB		x		
Cape Romanzof AFS				x
Sparrevohn AFS				x
Cape Newenham AFS				x
King Salmon AFS				x
Kotzebue AFS				x
Indian Mountain AFS				x
Tin City AFS				x
Tatalina AFS				x
Cape Lisburne AFS				x
Campion AFS				x
Murphy Dome AFS				x
Shemya AFS				x

	Reason for Non-Compliance			
	AIR	WATER	COVER	OTHER
Fort Yukon AFS				x
Cold Bay AFS				x
Clear News AFS		x		

SAMPLE FORMAT

STATUS OF COMPLIANCE ACTIONS FOR

EPA LAND DISPOSAL GUIDELINES

RCS: DD-I&L (A&AR) 1435
MAJOR AIR COMMAND: _____
DATE SUBMITTED:

INSTALLATION	REASON FOR NON-COMPLIANCE	CORRECTIVE ACTIONS	CORRECTIVE DATE	REMARKS
Sample AFB, CA	Water - High water table	Landfill will be closed and solid waste disposal contracted to city	8/77	

federal register

TUESDAY, SEPTEMBER 21, 1976

PART II:

ENVIRONMENTAL PROTECTION AGENCY

■

SOLID WASTE MANAGEMENT

Guidelines For Beverage Containers

APPENDIX B

Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 605-6]

PART 244—SOLID WASTE MANAGEMENT GUIDELINES FOR BEVERAGE CONTAINERS

Section 209 of the Solid Waste Disposal Act of 1965 (Pub. L. 89-272), as amended by the Resource Recovery Act of 1970 (Pub. L. 91-512), requires the Administrator of the U.S. Environmental Protection Agency (EPA) to "recommend to appropriate agencies and publish in the FEDERAL REGISTER guidelines for solid waste recovery, collection, separation, and disposal systems. * * *" Further, Section 211 mandates that Federal agencies "shall insure compliance with the guidelines recommended under Section 209 and the purpose of this (Solid Waste Disposal) Act."

In fulfillment of its responsibilities under Section 209, EPA promulgated the first set of guidelines: "Guidelines for the Thermal Processing and Land Disposal of Solid Wastes," on August 14, 1974 (40 CFR 240 and 241). Since that time, guidelines have been promulgated for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste on February 13, 1976 (40 CFR 243); for Source Separation for Material Recovery on April 23, 1976 (40 CFR 246); and for Resource Recovery Facilities in September of 1976 (40 CFR 245). In addition, non-mandatory guidelines for "Procurement of Products that Contain Recycled Material" were published in the FEDERAL REGISTER on January 15, 1976 (40 CFR 247).

These "Beverage Container Guidelines" were first published in proposed form in the FEDERAL REGISTER on November 13, 1975. At that time public comment was solicited and a period of 60 days was provided during which interested parties could make their views known to the Environmental Protection Agency.

The proposed guidelines required that Federal facilities establish a system for the return of beer and soft drink beverage containers in order to achieve the environmental benefits of reduced solid waste and litter and the conservation of energy and material resources. They required that all beverage containers be rendered returnable through the application of a 5 cent deposit as an incentive to the consumer to return empty containers. This refundable deposit was to be paid by the consumer, upon purchase of beverages, and refunded by the dealer when the empty container was returned.

The implicit goal of the proposed guidelines was to gain the desired environmental benefits through reuse or recycling of returned containers. It has become evident, through public and Congressional comments, that this point was not always clearly understood. Therefore, the guidelines now being published attempt to clarify that any type of container is acceptable for use in implementing a returnable beverage container system as long as beverage containers are returned and are either reused or recycled, where markets for recyclable materials are available. Changes have also been made to increase the flexibility available to agencies and facilities in implementing such a system to ease the adaptation of the guidelines' requirements to particular, local situations.

The Agency received 5955 responses during the comment period from private citizens, industry representatives, labor unions, environmental groups, and other government agencies. Copies of all responses received on or before January 12, 1976, are available for public inspection at the EPA Public Information Reference Unit (EPA Library), 401 M Street, S.W., Washington, D.C. during normal working hours. In order to facilitate review, the 5955 comments were carefully screened to identify the issues raised in each comment. Similar issues were then organized into groups which were then carefully summarized. These 33 summary issues reflect, but do not repeat verbatim, the views of every respondent who commented on the Proposed Beverage Container Guidelines on or before January 12, 1976. Two other documents are also on file with the EPA Public Information Reference Unit for public review. The first lists each respondent and indicates which respondents commented on each issue. The second explains each issue and presents the EPA responses to all issues raised. Duplicates of those two documents are also available for inspection at the Public Information Reference Unit of the 10 EPA Regional Offices.

The following discussion treats the more important of the 33 issues during the public comment period.

Several of those who commented on the guidelines were concerned with the issue of energy. Many based their objections on the erroneous assumption that these guidelines require the exclusive use of refillable bottles. They suggested that energy consumption under the guidelines would actually increase due to the increased bulk and weight of refillable containers, and resultant increases in transportation requirements. Extensive analyses have shown that refillable bottles, when reused several times, are less energy-intensive than either one-way glass bottles or cans when all factors are considered. Thus the introduction or increased use of refillable bottles on Federal facilities would provide benefits in terms of energy conservation. However, the fact is that the guidelines do not require the use of any particular container type, either implicitly or explicitly. Nonrefillable bottles and cans that are returned and recycled also conserve energy. Therefore, regardless of the types of containers used in implementing the guidelines, energy conservation should result.

Other commenters were concerned that the guidelines would have severe adverse effects on employment in the container manufacturing industry. The origin of these concerns is the prediction, in various estimates of the impact of national beverage container legislation, that a major shift in container mix from cans and nonrefillable bottles to refillable bottles would result from such legislation. Those estimates predict that a shift of national scope away from nonrefillable containers would cause the employment dislocations that these commenters fear. However, those impact predictions do not apply here, because the guidelines apply only to Federal facilities. These Federal facilities comprise only two to four percent of the national beverage market widely dispersed across the country. The remaining 96 to 98 percent of the national market would remain unchanged. Thus, even the maximum possible shift to refillable bottles at Federal facilities would have no more impact on the national container mix and, therefore, on employment in the container manufacturing industry, than a slight shift in consumer preference.

Many commenters indicated concern that the guidelines would have severe negative economic impact on some or all segments of the beer, soft drink, and container manufacturing industries and those industries that supply materials to them, as well as on the retail and distribution systems. Those who predict cost increases refer to some studies that have been performed in an attempt to predict the impact of national beverage container legislation. Their basic assumptions are not applicable to the guidelines because virtually all of these studies assume a substantial national shift from nonrefillable containers to refillables that would lead to extensive capital expenditures for new equipment. Again, because these guidelines apply only to the two to four percent of national beverage sales that take place on Federal facilities, it is neither appropriate nor accurate to extrapolate downward from national impact analyses. It is unlikely that any of the capital or other major costs predicted to result from national beverage container legislation would follow implementation of these guidelines, even if the container mix on Federal facilities shifted entirely to refillable bottles. Further, even if unexpected new costs are incurred by beverage producers, bottlers, distributors, or wholesalers, the provisions for nonimplementation described in § 244.100(d) can be applied if those costs preclude the effective achievement of the goals of the guidelines.

Most of those who cite adverse economic impacts anticipate that the ultimate result will be higher prices to consumers. Several others, though, assuming increased availability of beverages in refillable containers, anticipate reduced cost to consumers because refillables are the least expensive container type.

Because no new capital costs are expected to be incurred under the guidelines, no general price increases are expected either. Further, because beverages are less expensive in refillable containers, average beverage prices should be reduced by their increased use.

Some commenters expressed the belief that these guidelines would eliminate freedom of choice in products and pack-

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aging offered to Federal government and military personnel. This is not the case. The guidelines neither restrict nor require the use of any specific container type. In fact, others suggested that the guidelines would actually increase the choices available to consumers by increasing the likelihood that refillables will be added to the present container mix because they presently provide the least expensive means for achieving the environmental goals sought.

Some of those who commented indicated concern that, while the proposed guidelines provided for non-implementation due to economic impracticability, the term "economic impracticability" was not defined. This led some to fear that non-implementation could never be justified, while others feared that claims of economic impracticability might be used indiscriminately to justify non-implementation, even where implementation was actually possible. In response to these valid concerns, the guidelines have been modified to clarify the concept of economic impracticability. The final guidelines also explain particular circumstances in which practical considerations would rule out implementation, i.e. situations in which implementation is economically feasible, but would not operate effectively to achieve the goals of the guidelines.

Several commenters were confused by, or indicated concern about the provisions for vending machines in the proposed guidelines. Much of the confusion and concern was justified as those provisions were not clear. The proposed guidelines tried to consider the variety of physical and economic situations in which vending machines are used and prescribe specific requirements for that usage. As revised, the guidelines requirements have been written to allow decisions on vending machine implementation to be made on the basis of particular situations within a facility. Therefore, while the revised guidelines do not treat vending machine beverage sales explicitly, the provisions are sufficiently broad that they cover vending machines implicitly. Decisions for vending machine implementation should be based on the same considerations that are applied to other beverage sales.

Some commenters objected to the assertion in the proposed guidelines that the economic and inflationary impacts of the guidelines would be minor and the Agency's consequent decision that it was not required to prepare an Inflationary Impact Statement. These commenters point to a wide variety of studies and predictions, citing them as proof that increased costs or prices would result from implementation of the guidelines and that these increases would be inflationary. Virtually all of these predictions are highly dependent on the assumption that there would be a substantial national shift to refillable bottles. This is not expected to occur as a result of these guidelines.

The economic and inflationary impacts of the guidelines have been carefully evaluated. It has been determined that the effects will be minor and that the guidelines are not a "major action" requiring an inflation impact statement as prescribed by Executive Order 11821 and OMB Circular A-107.

Several commenters stated that EPA should withhold action on these guidelines until the subject of returnable beverage containers has been debated by the Congress. This is apparently a view that is not shared by the U.S. Senate. A returnable beverage container amendment proposed by Senator Hatfield to S. 2150, the Solid Waste Utilization Act of 1976, was rejected by the Senate after debate that was limited to 30 minutes. After the vote on this amendment, the following statements were made on the floor of the Senate (Congressional Record, June 30, 1976, p. S11058–S11086):

Mr. Stafford. I think it would be a mistake to view the defeat of the Hatfield amendment as a mandate to the Administrator of the Environmental Protection Agency to halt efforts to initiate innovative programs requiring returnable containers on Federal installations and facilities. Rather, today's vote may more properly be interpreted as a decision by the Senate that it does not want to authorize a nationwide container deposit law at this time.

Just as the bill permits individual States to chart their own courses of action, the Senate this morning has reinforced that principle by rejecting a single Federal standard.

However, the bill permits individual States to enact their own container policies and legislation. In that manner, innovative programs can be tested and demonstrated for study by the entire Nation.

Similarly, the proposal for a returnable container policy at Federal facilities can provide our Nation with valuable information.

Nothing that has happened on the floor of the Senate can properly be interpreted as a mandate from this body to halt that valuable demonstration effort.

Mr. Muskie. Mr. President, rejection of the Hatfield amendment should in no way prejudice EPA's ongoing programs to develop solid waste management programs which may include resource conservation—source reduction programs.

EPA currently has regulations which require deposits on beverage containers sold at Federal facilities. These regulations are new. We are still learning from them. They will continue in effect even without the Hatfield amendment so we can have a real test of the impact and implication of the kind of proposal without the amendment.

Neither of these statements was rebutted.

Following the defeat of his returnable beverage container amendment, Mr. Hatfield introduced an amendment calling for the President, through the cooperation of appropriate Federal agencies to study all aspects of national beverage container deposit legislation. This substitute amendment was passed by a vote of 85–1, with 14 not voting. While these guidelines affect a much smaller and widely dispersed market than would national legislation, information gained through their implementation could clearly be an integral part of such a study. S. 2150 was passed by a vote of 88–3 with 9 not voting.

Future Revisions. Section 209 of the Act states that guidelines "shall be revised from time to time." Following the public comment period, several changes were made to clarify and refine the proposed guidelines. No more changes are planned for the immediate future. Implementation of the guidelines may result in the identification of areas that require refinement or modification. To that end, comments or suggestions are invited from persons with experience in implementing these guidelines or other returnable beverage container systems.

Promulgation. These guidelines are issued under the Authority of Section 209 (a) of the Solid Waste Disposal Act of 1965 (Pub. L. 89-272) as amended by the Resource Recovery Act of 1970 (Pub. L. 91-512). Chapter I of Title 40 of the Code of Federal Regulations is amended effective October 20, 1976 by adding a new Part 244.

Dated: September 10, 1976.

RUSSELL E. TRAIN,
Administrator.

Subpart A—General Provisions

Sec.
244.100 Scope.
244.101 Definitions.

Subpart B—Requirements

244.200 Requirements.
244.201 Use of Returnable Beverage Containers.
244.202 Information.
244.203 Implementation Divisions and Reporting.

Appendix—Recommended Bibliography.

Subpart A—General Provisions

§ 244.100 Scope.

(a) The "Requirement" sections contained herein delineate minimum actions for Federal agencies for reducing beverage container waste.

(b) Section 211 of the Act and Executive Order 11752 make the "Requirements" section of the guidelines mandatory upon Federal agencies. They are recommended for adoption by State and local governments and private agencies.

(c) *Intent and Objectives.*—(1) These Guidelines for Beverage Containers are intended to achieve a reduction in beverage container solid waste and litter, resulting in savings in waste collection and disposal costs to the Federal Government. They are also intended to achieve the conservation and more efficient use of energy and material resources through the development of effective beverage distribution and container collection systems.

(2) The guidelines are intended to achieve these goals by making all beverage containers returnable and encouraging reuse of recycling of the returned containers. To accomplish the return of beverage containers, a deposit of at least five cents on each returnable beverage container is to be paid upon purchase by the consumer and refunded to the consumer when the empty container is returned to the dealer. This refund value provides a positive incentive for consumers to return the empty containers. Once containers are returned, nonrefillable containers can be recycled and refillable bottles can be reused.

(3) The minimum deposit of five cents has been chosen because it is deemed a large enough incentive to induce the return of most containers, and it is the most widely used deposit amount in present deposit systems. Because this action is intended to be compatible with present deposit systems, it is recommended that Federal facilities apply higher deposit levels in localities where higher levels are ordinarily used and lower deposit levels if the local area has an established return system with a minimum deposit level, for some or all beverage containers, of less than five cents.

(4) Final determination of how the requirements of the guidelines will be met rests with the head of each Federal agency.

(5) Federal facilities implementing the guidelines must charge refundable deposits on both refillable beverage containers and nonrefillable ones. Use of a refillable beverage container system will achieve the objectives of this guideline and will also most likely result in lower beverage prices for consumers. However, placing refundable deposits on nonrefillable containers, which are subsequently returned and recycled, also achieves the objectives of the guidelines.

(d) *Nonimplementation for Federal Facilities.*—(1) The objectives of these guidelines are to reduce solid waste and litter and to conserve energy and materials through the use of a return system for beverage containers. In order to have a substantial impact on solid waste and litter created by beverage containers and to effect the concomitant energy and materials savings in a cost-effective manner, three conditions will be necessary: first, that consumers continue to purchase beverages from dealers at Federal facilities; second, that empty containers be returned and then reused or recycled; third, that the costs of implementation are not prohibitive. The head of each agency should consider these factors in order to make a determination regarding implementation of these guidelines.

(2) The Administrator recognizes that the requirements of these guidelines may not be practical at some Federal facilities due to geographic or logistic problems of a local nature. Further, he recognizes that the use of a returnable beverage container system will accomplish nothing if all reasonable efforts to implement such a system have failed to induce consumers to buy beverages in returnable containers or to return them when empty. When these situations persist, agencies may determine not to continue implementation of these guidelines.

(3) Federal agencies that make the determination not to use returnable containers shall provide to the Administrator the analysis and rationale used in making that determination as required by Section 244.100(f)(3). The Administrator will publish notice of availability of this report in the FEDERAL REGISTER. The following conditions are considered to be valid reasons for not using returnable beverage containers.

(i) Situations in which, after a trial implementation, there is no alternative available that results in meeting the objectives of the guidelines in a cost effective manner. Examples of indications of this situation include, but are not limited to: (1) data indicating a substantial and persistent reduction in beverage sales that is not directly attributable to any other cause; and (2) failure to establish a beverage container return rate that effectively achieves the objectives of these guidelines.

(ii) Situations in which no viable alternative can be found which avoids excessive, irrecoverable costs to the facility or the Agency. These conditions may prevail at either part or all of a facility. It is expected that facilities will use returnable beverage containers in those portions of their beverage distribution systems where it is effective to do so. However, it is recognized that in some situations, such as for unattended vending machines where it is impractical to establish refund locations, or in small remote outlets where the majority of consumers are transient, it may not be possible to use returnable containers effectively. The provisions for nonimplementation can be applied to those portions of a facility.

(e) The Environmental Protection Agency will render technical assistance and other guidance to Federal agencies when requested to do so pursuant to Section 3(d)(1) of Executive Order 11752.

(f) *Reports.*—(1) *Implementation Schedule Report.* This report is to advise the EPA of plans for the implementation of these guidelines. It is to be submitted to the Administrator within 60 days following an agency's determination to implement, and should include a list of planned implementation actions and a schedule indicating when those actions will be taken.

(2) *Annual Status Report.*—This report will provide information to the Administrator which will enable him to monitor compliance with the guidelines as required by Executive Order 11752. The form of this report will be prescribed by the Administrator at a later time.

(3) *Nonimplementation Report.*—Nonimplementation reports are to be submitted to the Administrator as soon as possible after a final agency determination has been made not to use returnable beverage containers but not later than sixty days after this determination. The Administrator will indicate to the reporting agency his concurrence or nonconcurrence with the agency's decision, including his reasons therefor. This concurrence or nonconcurrence is advisory.

Nonimplementation reports should include:

(i) A description of alternative actions considered or implemented, including those actions which, if taken or continued, would have involved a deposit or return system.

(ii) A description of ongoing actions that will be continued and actions taken or proposed that would preclude future implementation of a returnable beverage container system. This statement should identify all agency facilities or categories of facilities that will be affected.

(iii) An analysis in support of the determination not to implement a deposit system, including technical data, market studies, and policy considerations used in making that determination. If the determination not to implement is based on inability to achieve a cost-effective system, this analysis should include such things as sales volume, impact on total overhead costs, administrative costs, other costs of implementation, percentage of containers sold that are returned, solid waste and litter reduction, energy and materials saved, and retail prices (before and after implementation).

§ 244.101 Definitions.

(a) "Beverage" means carbonated natural or mineral waters; soda water and similar carbonated soft drinks; and beer or other carbonated malt drinks in liquid form and intended for human consumption.

(b) "Beverage container" means an airtight container containing a beverage under pressure of carbonation. Cups and other open receptacles are specifically excluded from this definition.

(c) "Consumer" means any person who purchases a beverage in a beverage container for final use or consumption.

(d) "Dealer" means any person who engages in the sale of beverages in beverage containers to a consumer.

(e) "Deposit" means the sum paid to the dealer by the consumer when beverages are purchased in returnable beverage containers, and which is refunded when the beverage container is returned.

(f) "Distributor" means any person who engages in the sale of beverages, in beverage containers, to a dealer, including any manufacturer who engages in such sale.

(g) "Federal Agency" means any department, agency, establishment, or instrumentality of the executive branch of the United States government.

(h) "Federal facility" means any building, installation, structure, land, or public work owned by or leased to the Federal Government. Ships at sea, aircraft in the air, land forces on maneuvers, and other mobile facilities; and United States Government installations located on foreign soil or on land outside the jurisdiction of the United States Government are not considered "Federal facilities" for the purpose of these guidelines.

(i) "On-Premise Sales" means sales transactions in which beverages are purchased by a consumer for immediate consumption within the area under control of the dealer.

(j) "Recycling" means the process by which recovered materials are transformed into new products.

(k) "Refillable Beverage Container" means a beverage container that when returned to a distributor or bottler is refilled with a beverage and reused.

(l) "Refund" means the sum, equal to the deposit, that is given to the consumer or the dealer or both in exchange for empty returnable beverage containers.

(m) "Returnable Beverage Container" means a beverage container for which a deposit is paid upon purchase and for which a refund of equal value is payable upon return.

Subpart B—Requirements

§ 244.200 Requirements.

§ 244.201 Use of Returnable Beverage Containers.

(a) All beverages in beverage containers sold or offered for sale shall be sold in returnable beverage containers. On-premise sales are specifically excluded from this requirement provided that empty beverage containers are returned to the distributor for refilling, or are recycled, either by the dealer or by the distributor when markets for recyclable materials are available.

(b) The deposit shall be at least five (5) cents unless the local area has an established return system in operation with a lower minimum deposit level. In those specific areas, Federal facilities may adopt a minimum deposit equal to the local deposit level.

(c) A dealer shall accept from a consumer any empty beverage containers of the kind, size and brand sold by the dealer, and pay the consumer the refund value of the beverage container, provided the container is refillable or is labelled in accordance with Section 244.202(a).

(d) The refund shall be provided at the place of sale whenever possible or as close to that place as practicable, and in any event, on the premises of the particular federal facility involved. Refund locations shall be conspicuously labelled as refund centers. If they are not in the immediate vicinity of the place of sale, notice of their location shall be prominently posted at that place of sale.

(e) A dealer shall not procure beverages in beverage containers from distributors who refuse to: accept from the dealer any returnable beverage containers of the kind, size and brand sold by the distributor; pay to the dealer the refund value of the beverage containers; and reuse the returned containers or recycle them where markets for recyclable materials are available.

(f) Returned refillable beverage containers shall be returned to the distributor for refilling. Nonrefillable beverage containers shall be returned to the appropriate distributor or recycled, where markets for recyclable materials are available.

§ 244.202 Information.

(a) With the exception of refillable beverage containers, every returnable beverage container sold or offered for sale by a dealer shall clearly and conspicuously indicate, by embossing or by stamp, or by a label securely affixed to the beverage container, the refund value of the container and that the container is returnable.

(b) Dealers shall inform consumers that beverages are sold in returnable beverage containers by placing a sign, or a shelf label, or both, in close proximity to any sales display of beverages in returnable containers. That sign or label shall indicate that all containers are returnable, separately list the beverage price and deposit to be paid by the consumer, and shall indicate where the empty beverage containers may be returned for refund of the deposit.

§ 244.203 Implementation Decisions and Reporting.

Federal agencies are to determine whether or not to implement these guidelines by (date, one year after promulgation in the FEDERAL REGISTER). Reporting of that determination shall be in accordance with the following requirements:

(a) Federal agencies that plan to implement these guidelines shall report that decision to the Administrator in accordance with the procedures described in § 244.100(f)(1).

(b) Implementing agencies shall provide to the Administrator an annual status report in accordance with the procedures described in § 244.100(f)(2).

(c) Agencies that determine not to implement these guidelines shall provide to the Administrator a nonimplementation report in accordance with § 244.100(f)(3). This report shall include the reasons for nonimplementation, based on concepts presented in § 244.100(d), and shall be repeated at least every three years.

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[FR Doc.76-27390 Filed 9-20-76;8:45 am]

Notice of Final Rulemaking clarifying the contents of State Implementation Plans (SIPs) under the Clean Air Act. In the action, the Administrator revised the "Identification of Plan" section in each State subpart in 40 CFR Part 52.

Two Notices approving revisions to the State of Oregon Implementation Plan which were published on February 5, 1976 (41 FR 5280) and February 24, 1976 (41 FR 8058) were not included in the new format published on March 2. In order to bring § 52.1970—the "Identification of Plan" section for the State of Oregon—up to date, the revisions approved on February 5 and 24 are added to the section as follows:

Subpart MM—Oregon

In § 52.1970, paragraph (c) is revised by adding the following:

§ 52.1970 Identification of plan.

* * * * *

(c) The plan revisions listed below were submitted on the dates specified.

* * * * *

(18) Oregon Revised Statute 468.095 for public availability of emission data submitted on August 1, 1975 by the Department of Environmental Quality.

(19) Indirect Source Regulation (OAR, Chapter 340 §§ 20–100 through 20–135) submitted on July 24, 1975 by the Department of Environmental Quality.

(Secs. 110 and 301 of the Clean Air Act, as amended (42 U.S.C. 1857c-5, 1857g).)

Dated: April 12, 1976.

CLIFFORD V. SMITH, JR.,
Regional Administrator.

[FR Doc.76-11869 Filed 4-22-76;8:45 am]

[FRL-617-7]

PART 246—SOURCE SEPARATION FOR MATERIALS RECOVERY GUIDELINES

On September 17, 1975, notice was published in the FEDERAL REGISTER (40 FR 42985) proposing regulations to establish a new part 246 of Chapter I of Title 40 of the Code of Federal Regulations pursuant to the authority of Section 209 (a) of the Solid Waste Disposal Act of 1965 (Public Law 89–272), as amended by the Resource Recovery Act of 1970 (Public Law 91–512). Section 209 of the amended Act requires the Administrator of the U.S. Environmental Protection Agency (EPA) to "recommend to appropriate agencies and publish in the FEDERAL REGISTER guidelines for solid waste recovery, collection, separation, and disposal systems (including systems for private use). * * *" Further, section 211 mandates that Federal agencies "shall insure compliance with the guidelines recommended under section 209 and the purposes of (the Solid Waste Disposal Act) * * *".

On August 14, 1974, "Thermal Processing and Land Disposal of Solid Waste Guidelines" were promulgated in the FEDERAL REGISTER (39 FR 29327) as the first set of guideline that were promulgated in fulfillment of the requirement for guidelines on disposal systems. On January 15, 1976, "Guidelines for Procurement of Products that Contain Recycled Material" were published in the FEDERAL REGISTER (41 FR 2355). On Febuary 13, 1976, "Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste" were promulgated in the FEDERAL REGISTER (41 FR 6766). Additionally, on November 13, 1975, EPA published "Beverage Container Guidelines" in the FEDERAL REGISTER (40 FR 52967), and on January 15, 1976, published "Guidelines for Resource Recovery Facilities" (41 FR 2359), in proposed form for public comment. The guidelines now being promulgated are intended to meet the Administrator's initial obligation to publish guidelines in the areas of recovery and separation systems. The EPA expressly recognizes that Section 209 mandates that guidelines "shall be revised from time to time" and it intends to revise and supplement these guidelines in the future.

Section 211 of the Act and Executive Order 11752 make the "Requirements" sections of the guidelines mandatory upon Federal agencies. The recommendatory sections of the guidelines present methods and techniques that EPA studies and analyses indicate will be the most effective and economic in carrying out the mandatory requirements. The recommendatory sections, therefore, present desirable actions while allowing for implementation of other source separation techniques in instances in which these recommended methods and techniques are not practicable or economically feasible.

The economic and inflationary impacts of the guidelines have been carefully evaluated. It has been determined that the effects will be minor and that the guidelines are not a "major action" requiring an inflation impact statement as prescribed by Executive Order 11821 and OMB Circular A–107.

INTRODUCTION

These guidelines are intended to provide requirements and recommended procedures for the establishment and utilization by Federal agencies of source separation systems which will, in an economic manner, conserve resources, reduce waste disposal and produce high value industrial raw materials.

The materials that must be separated for recycling are high-grade office papers (white ledger, computer print-outs, and computer cards), corrugated containers and newspapers. Also recommended, but not required, is the separation of glass, cans, and mixed low-grade papers. The latter materials (glass, cans, and mixed low-grade papers) may also be retrieved through mechanical systems, as discussed in the "Resource Recovery Facilities Guidelines" that were proposed in the FEDERAL REGISTER on January 15, 1976 (pp. 2359–2363).

The systems described in these guidelines have been designed to separate specific materials at the source of generation in order to minimize contamination and to recover high value materials that can be sold for recycling. These materials, if mixed with other elements of the waste stream, would lose their inherent value. Source separation has long been used by government and private industry to retrieve a large variety of materials which would either not be recoverable at all or not be recoverable at their highest economic value if placed with mixed solid waste. The source separation systems recommended in these guidelines have been proven to be effective in numerous private industry and governmental settings in removing large quantities of the specified materials from the waste stream. In addition, the systems described herein, if implemented correctly, could produce a savings to the Federal government at low capital outlay.

PUBLIC COMMENT

Written comments on the proposed regulations were invited and were received from 90 sources. Of these 90 comments, 28 favored promulgation without modifications, 35 favored promulgation with modifications that would strengthen the guidelines and reduce flexibility, five favored promulgation of the guidelines with modifications that would weaken the requirements placed on agencies, and one opposed promulgation of the guidelines. In addition, 21 comments were received that favored promulgation with minor clarifications and/or procedural changes.

As a result of these written comments and in an effort to clarify the intent of the regulations, certain changes were made. All of the written comments and the Agency's disposition of the comments are on file with the Agency. The major issues raised by the commenters and the Agency's consideration of them are described below.

Twenty-five commenters objected to the exclusion of smaller facilities (those with less than a minimum number of people or minimum quantity of discards) from compliance with the guidelines. The General Services Administration, however, wanted the size limitation raised rather than lowered. The limitations were originally placed in the guidelines in response to the comments received from Federal agencies during the first interagency review period. These comments suggested that mandating paper recovery from all Federal facilities would place an intolerable administrative burden on agencies with hundreds of small (two- or three-person) offices, military bases with ten to fifteen families or commercial facilities that produce a few hundred pounds of corrugated per month.

In response to these comments and in order to maximize the recovery of materials and minimize the administrative

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burden, EPA has retained the size limitation requirements of sections 246.200–1, 246.201–1 and 246.202–1, as they were in the proposed document and has added sections 246.200–2, 246.201–2, and 246.202–2 which recommend that recovery systems in conformance with the guidelines be investigated and implemented in facilities of smaller size than those mandated in the Requirement sections.

Numerous comments were received on the issue of burning recoverable paper for energy. While some wanted EPA to prohibit such usage, most wanted clarification as to whether the materials covered by these guidelines must be separated at the source for recycling or whether such materials could be recovered in centralized recovery facilities or burned for energy production.

The Requirement sections of these guidelines state that high-grade paper, newsprint and corrugated shall be source separated and sold for purposes of material recycling. However, there may be circumstances where the source separation and recycling of high-grade paper, corrugated containers, or newspaper is economically impracticable due to inability to sell the recovered materials or costs that are unreasonably high. Under such circumstances, Agencies may choose to recover these materials in centralized recovery facilities or through conversion into energy. The rationale and analysis supporting a decision to choose this form of recovery instead of source separation must be reported to the Administrator.

It is the intent of EPA that agencies carry out to the maximum extent possible both source separation, as outlined in these guidelines, and centralized recovery of materials and energy, as outlined in the "Resource Recovery Facilities Guidelines" which have been proposed by EPA. Following source separation of paper, the remaining wastes should be processed when possible in accordance with the "Resource Recovery Facilities Guidelines." Implementation of both guidelines will result in maximum conservation benefit to the country and economic savings to the government. Additionally, it is desirable and it is the clear intent of Congress that the Federal government take a leadership role in the demonstration of techniques for both the separation of materials at the source and the utilization of resource recovery facilities.

Nineteen comments favored the inclusion of glass and can recovery through separate collection as a requirement rather than as a recommended procedure. It is EPA's responsibility to mandate recovery systems on which data have been developed. Glass and can recovery through recycling centers has been practiced for a number of years and, given favorable, nearby market conditions, can be economically viable. Separate curbside collection systems for these materials are now in the demonstration stage and are currently under investigation by EPA. As data are developed, these guidelines may be modified to reflect the inclusion of glass and can recovery in the Requirement section of these guidelines. It is expected that Federal agencies with available markets for glass and cans will make every effort to implement the recommendation.

Sixteen commenters requested that reports be published in local newspapers to inform interested citizens of the reasons put forth by agencies for not implementing the guidelines. In addition, one commenter requested the phrase "the Administrator may publish notice of availability of this report" be changed to "must". Section 246.100(g) has been changed in response to these comments and now states, "The Administrator shall publish notice of the availability of this report to the general public in the FEDERAL REGISTER." (The FEDERAL REGISTER is the official organ of the Federal government for the publication of notices of this type.)

One commenter suggested that the quantity of materials to be recovered should be estimated prior to recovery and that this factor should be included in the market study, cost analysis and contract sections of the guidelines. In response to this comment, sections 246.200–3, –8, –9, 246.201–4, –7 and –8, and 246.202–3, –6 and –7 have been altered to include quantity estimations.

Eleven commenters requested that the guidelines be recommended to all contractors and grantees of the Federal government. Although contractors and grantees of the Federal government are certainly free to adopt the recommended practices, Section 209(a) of the Solid Waste Act, as amended, specifically states that the Administrator shall recommend the guidelines to appropriate agencies. It is the judgment of EPA from this passage and from other sections of the Act, that the term "agencies" is meant to refer to a governmental body. This is why the guidelines are recommended to State, interstate, regional, and local governments. The guidelines are mandatory for certain contractors and grantees of the Federal government, as prescribed by Sections 208 and 211 of the Act. However, there is no indication from the Act or the legislative history that the guidelines were intended to be specifically recommended to all Federal grantees and contractors.

Two comments were received that express concern that Federal agencies would use the excuse of budget restrictions to justify non-implementation and requested that EPA specifically define the term "unreasonably high costs." Also, on this point, several Federal agencies requested that EPA specify that programs be implemented only when they are self-supporting.

As provided in section 211 of the Act and section 3(d) of Executive Order 11752, heads of Federal agencies are ultimately responsible for determining which facilities under their jurisdiction shall comply with the guidelines. EPA believes that practices required by the guidelines will be less costly than existing solid waste management practices in the long term. However, the legislative history of the Solid Waste Disposal Act, as amended, in the portion that is quoted in the next paragraph, indicates that even where implementation of the guidelines results in cost increases, budget restrictions do not constitute a sufficient excuse that would prevent compliance with the guidelines and that Federal agencies have a responsibility to request sufficient appropriations from Congress to manage solid waste properly as part of their normal operating expenses. The legislative history does not provide any guidance as to how much additional cost is acceptable. Consequently, the Federal agencies must make the decision based on a case-by-case analysis of actions required by the guidelines.

In making this decision, agencies are reminded of the legislative history concerning section 211 of the Solid Waste Disposal Act, as amended, which indicates that the Congress intended that Federal agencies take a leadership role in solid waste management, as indicated by the following quote from page 15 of the Senate Report No. 91–1034, Senate Committee on Public Works, 91st Congress, 2d Session (1970).

> Federal agencies are inclined to place important environmental quality control functions in a subordinate role to their mission. This is no longer appropriate or acceptable. Federal agencies which generate volumes of waste have a correlative responsibility to request appropriations from Congress necessary to properly manage such waste as part of their normal operating expenses. The public will not tolerate the excuse that budget restrictions prevent compliance with waste management standards and guidelines; it is abundantly clear that the provisions of the environmental control laws do not permit the same excuse to be advanced by individuals or private organizations. Federal agencies must take the lead in overcoming the reluctance to invest funds necessary to control solid waste pollution.

A number of agencies questioned how responsibility for compliance would be handled when the buildings in which they are housed are maintained or controlled by another agency, usually the General Services Administration (GSA). GSA suggested that in these instances it should have the responsibility for determining compliance with the guidelines.

EPA proposes that responsibility for program implementation be shared as follows:

(1) In buildings owned or operated, or both, by GSA, the responsibility for implementing the guidelines would be as follows: GSA would be responsible for overall program coordination, for negotiating for the sale of the separated paper, arranging for collection of the paper from the central office locations and its delivery to the storage space, arranging for the storage space, arranging for the pick-up of the paper by the sales contractor, conducting any required economic analysis, and preparing the reports required by these guidelines. The agency or agencies occupying the building would be responsible for the necessary publicity and for the procurement of desk-top containers and centralized bins or boxes.

(2) In buildings leased by GSA, but managed by the tenant agency, and in those buildings owned and managed by an agency other than GSA, that agency would be responsible for guideline compliance. This would include all of the actions listed in paragraph (1) above except negotiating for the sale of the recycled paper, which would be the responsibility of GSA.

(3) In facilities in which the tenant agency has "revolving fund" authority, the agency would be responsible for guideline compliance and would carry out all of the actions listed in paragraph (1), including marketing the recycled paper.

(4) In facilities operated for a Federal agency by a private contractor when the performance of the contract involves the contractor in solid waste disposal activities, the agency would be responsible for assuring that the contractor complies with the guideline. Section 3(b) of EO 11752 states, "Where activities are carried out at Federal facilities acquired by leasing or other Federal agreements, the head of the responsible agency may at his discretion, to the extent permissible under applicable statutes and regulations, require the lessee or permittee to assume full responsibility for complying with standards."

Three agencies questioned whether they would have to conduct market studies for each facility or geographic area. Under the Federal Property and Administrative Services Act—1949, as amended (40 U.S.C. 471), agencies responsible for disposal of excess government property are required to set specifications and request bids for the purchase of various grades of paper specified in the guidelines in accordance with their normal procedures. In the majority of cases, the agency responsible for market studies and sales contract negotiation will be either the General Services Administration or the Defense Supply Agency. It is expected that these agencies will investigate markets and negotiate contracts on a regional basis and that all agencies within a Federal region will be required to do no more than request from GSA or DSA the present revenue level for each grade of paper to be recycled in order to factor this figure into their costs analysis. If no bids are received for a given paper grade, no facility within the geographic region covered by the bid specification will be required to source separate that grade.

While the above is typical of the majority of cases, exceptions do exist. Agencies with revolving fund authority may, if they wish, conduct independent market studies and negotiate separate contracts. Of the ten Federal facilities presently recovering white ledger grade papers in conformance with these guidelines, *seven have done so under a sales* contract negotiated by GSA, while the remaining three have negotiated separate contracts under a revolving fund authority.

PROMULGATION

These guidelines are issued under the Authority of Section 209(a) of the Solid Waste Disposal Act of 1965 (Pub. L. 89-272) as amended by the Resource Recovery Act of 1970 (Pub. L. 91-512).

Chapter I of Title 40 of the Code of Federal Regulations is amended effective May 24, 1976 by adding a new Part 246 reading as follows:

Dated: April 16, 1976.

RUSSELL E. TRAIN,
Administrator.

Subpart A—General Provisions

Sec.

Subpart B—Requirements and Recommended Procedures

APPENDIX—RECOMMENDED BIBLIOGRAPHY

AUTHORITY: Sec. 209(a), Pub. L. 89-272, as amended by Pub. L. 91-512.

Subpart A—General Provisions

§ 246.100 Scope.

(a) These guidelines are applicable to the source separation of residential, commercial, and institutional solid wastes. Explicitly excluded are mining, agricultural, and industrial solid wastes; hazardous wastes; sludges; construction and demolition wastes; infectious wastes; classified waste.

(b) The "Requirement" sections contained herein delineate minimum actions for Federal agencies for the recovery of resources from solid waste through source separation. Pursuant to Section 211 of the Solid Waste Disposal Act, as amended, and Executive Order 11752 Section 4(a), the "Requirement" sections of these guidelines are mandatory for all Federal agencies that generate solid waste. In addition, they are recommended to State, interstate, regional, and local governments for use in their activities.

(c) The "Recommended Procedures" sections are presented to suggest actions or preferred methods by which the objectives of the requirements can be realized. The "Recommended Procedures" are not mandatory for Federal agencies.

(d) The Environmental Protection Agency will render technical assistance in the form of sample cost analysis formats, sample bid specifications, implementation guidance documents and other guidance to Federal agencies when requested to do so, pursuant to Section 3(d)1 of Executive Order 11752.

(e) Within one year after the effective date of these guidelines, agencies shall make a final determination as to what actions shall be taken to adopt the requirements of these guidelines and shall, within two months of such determination, submit to the Administrator a schedule of such actions.

(f) Federal agencies that make the determination not to source separate as described in §§ 246.200-1, 246.201-1, and 246.202-1, for whatever reason, shall make available to the Administrator the analysis and rationale used in making that determination. The Administrator shall publish notice of the availability of this report to the general public in the FEDERAL REGISTER. The following are considered to be valid reasons for not source separating under individual facts and circumstances: inability to sell the recovered materials due to lack of market, and costs so unreasonably high as to render source separation for materials recovery economically impracticable.

(1) The following points are to be covered in the report:

(i) A description of alternative actions considered with emphasis on those alternatives which involve source separation for materials recovery.

(ii) A description of ongoing actions which will be continued and new actions taken or proposed. This statement should identify all agency facilities which will be affected by these actions including a brief description of how such facilities will be affected.

(iii) An analysis in support of the action chosen by the agency including technical data, market studies, and policy considerations used in arriving at such a determination.

In covering the points above, agencies should make every effort to present information succinctly in a form easily understood, but in sufficient detail so that the factors influencing the decision not to source separate for materials recovery are clear.

(2) The above report shall be submitted to the Administrator as soon as possible after a final agency determination has been made not to adopt the requirements of these guidelines, but in no case later than sixty days after such final determination. The Administrator will indicate to the agency his concurrence/nonconcurrence with the agency's decision, including his reason therefor.

(3) Implementation of actions that would preclude source separation for materials recovery shall be deferred, for sixty days where feasible, in order to give the Administrator an opportunity to receive, analyze and seek clarification of the above required report.

(4) It is recommended that where the report required by § 246.100(f) concerns an action for which an Environmental Impact Statement (EIS) is required by the National Environmental Policy Act, that the report be circulated together with the EIS.

(g) In order that the Administrator may fulfill his responsibilities as set forth in EO 11752, Section (d,6) to "maintain a continuing review of the implementation of this order", agencies shall, on a yearly basis, submit to the Administrator a report outlining the actions taken by the agency pursuant to these guidelines.

(h) The reports required under § 246.100 (e), (f), and (g) shall be made on forms to be prescribed by the Administrator by notice in the FEDERAL REGISTER.

§ 246.101 Definitions.

As used in these guidelines:

(a) "Agricultural solid waste" means the solid waste that is generated by the rearing of animals, and the producing and harvesting of crops or trees.

(b) "Baler" means a machine used to compress solid wastes, primary materials, or recoverable materials, with or without binding, to a density or form which will support handling and transportation as a material unit rather than requiring a disposable or reuseable container. This specifically excludes briquetters and stationary compaction equipment which is used to compact materials into disposable or reuseable containers.

(c) "Bulk container" means a large container that can either be pulled or lifted mechanically onto a service vehicle or emptied mechanically into a service vehicle.

(d) "Classified Waste" means waste material that has been given security classification in accordance with 50 U.S.C. 401 and Executive Order 11652.

(e) "Collection" means the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point.

(f) "Commercial establishment" means stores, offices, restaurants, warehouses and other non-manufacturing activities.

(g) "Commercial solid waste" means all types of solid wastes generated by stores, offices, restaurants, warehouses and other non-manufacturing activities, and non-processing wastes such as office and packing wastes generated at industrial facilities.

(h) "Construction and demolition waste" means the waste building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations on pavements, houses, commercial buildings and other structures.

(i) "Compartmentalized vehicle" means a collection vehicle which has two or more compartments for placement of solid wastes or recyclable materials. The compartments may be within the main truck body or on the outside of that body as in the form of metal racks.

(j) "Corrugated container waste" means discarded corrugated boxes.

(k) "Corrugated box" means a container for goods which is composed of an inner fluting of material (corrugating medium) and one or two outer liners of material (linerboard).

(l) "Federal facility" means any building, installation, structure, land, or public work owned by or leased to the Federal Government. Ships at sea, aircraft in the air, land forces on maneuvers, and other mobile facilities are not considered Federal facilities for the purpose of these guidelines. United States Government installations located on foreign soil or on land outside the jurisdiction of the United States Government are not considered Federal facilities for the purpose of these guidelines.

(m) "Food waste" means the organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods; commonly called garbage.

(n) "Generation" means the act or process of producing solid waste.

(o) "High-grade paper" means letterhead, dry copy papers, miscellaneous business forms, stationery, typing paper, tablet sheets, and computer printout paper and cards, commonly sold as "white ledger," "computer printout" and "tab card" grade by the wastepaper industry.

(p) "Industrial solid waste" means the solid waste generated by industrial processes and manufacturing.

(q) "Infectious waste" means: (1) Equipment, instruments, utensils, and fomites (any substance that may harbor or transmit pathogenic organisms) of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies; (2) laboratory wastes, such as pathological specimens (e.g. all tissues, specimens of blood elements, excreta, and secretions obtained from patients or laboratory animals) and disposable fomites attendant thereto; (3) surgical operating room pathologic specimens and disposable fomites attendant thereto and similar disposable material from outpatient areas and emergency rooms.

(r) "Institutional solid waste" means solid wastes generated by educational, health care, correctional and other institutional facilities.

(s) "Mining wastes" means residues which result from the extraction of raw materials from the earth.

(t) "Post-consumer waste" (PCW) means a material or product that has served its intended use and has been discarded for disposal or recovery after passing through the hands of a final consumer.

(u) "Recoverable resources" means materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes.

(v) "Recovery" means the process of obtaining materials or energy resources from solid waste.

(w) "Recycled material" means a material that is used in place of a primary, raw or virgin material in manufacturing a product.

(x) "Recycling" means the process by which recovered materials are transformed into new products.

(y) "Residential solid waste" means the wastes generated by the normal activities of households, including but not limited to, food wastes, rubbish, ashes, and bulky wastes.

(z) "Separate collection" means collecting recyclable materials which have been separated at the point of generation and keeping those materials separate from other collected solid waste in separate compartments of a single collection vehicle or through the use of separate collection vehicles.

(aa) "Sludge" means the accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins. It does not include solid or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved material in irrigation return flows or other common water pollutants.

(bb) "Solid waste" means garbage, refuse, sludge, and other discarded solid materials, including solid waste materials resulting from industrial, commercial, and agricultural operations and from community activities, but does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial wastewater effluents, dissolved materials in irrigation return flows or other common water pollutants. Unless specifically noted otherwise, the term "solid waste" as used in these guidelines shall not include mining, agricultural, and industrial solid wastes; hazardous wastes; sludges; construction and demolition wastes; and infectious wastes.

(cc) "Source separation" means the setting aside of recyclable materials at

their point of generation by the generator.

(dd) "Specification" means a clear and accurate description of the technical requirements for materials, products or services, identifying the minimum requirements for quality and construction of materials and equipment necessary for an acceptable product. In general, specifications are in the form of written descriptions, drawings, prints, commercial designations, industry standards, and other descriptive references.

(ee) "Stationary compactor" means a powered machine which is designed to compact solid waste or recyclable materials, and which remains stationary when in operation.

(ff) "Storage" means the interim containment of solid waste after generation and prior to collection for ultimate recovery or disposal.

(gg) "Virgin material" means a raw material used in manufacturing that has been mined or harvested and has not as yet become a product.

Subpart B—Requirements and Recommended Procedures

§ 246.200 High-grade paper recovery.

§ 246.200–1 Requirements.

High-grade paper generated by office facilities of over 100 office workers shall be separated at the source of generation, separately collected, and sold for the purpose of recycling.

§ 246.200–2 Recommended procedures: High-grade paper recovery from smaller offices.

The recovery of high-grade paper generated by office facilities of less than 100 office workers should be investigated in conformance with the following recommended procedures and implemented where feasible.

§ 246.200–3 Recommended procedures: Market study.

An investigation of markets should be made by the organization responsible for the sale of recyclable materials in each Federal agency and should include at a minimum:

(a) Identifying potential purchasers of the recovered paper through standard market research techniques;

(b) Directaly contracting buyers, and determining the buyers' quality specifications, the exact types of paper to be recycled, potential transportation agreements and any minimum quantity criteria; and

(c) Determining the price that the buyer will pay for the recovered paper and the willingess of the buyer to sign a contract for purchase of the paper at a guaranteed minimum price.

§ 246.200–4 Recommended procedures: Levels of separation.

A two-level separation is recommended for most facilities. This separation should consist of (a) high-grade wastepaper and (b) all other waste. Facilities that produce large enough quantities of waste computer paper and cards to make their separation into a separate category cost effective may choose to implement three levels of separation: (1) computer papers, (2) other high grade papers, (3) all other wastes.

§ 246.200–5 Recommended procedures: Methods of separation and collection.

(a) Systems designed to recover high grades of office paper at the source of generation, i.e., the desk, are the desk-top system, the two-wastebasket system, and the office centralized container system.

(b) With the desk-top system, recyclable paper is placed by the generator in a container on his desk, while other waste is placed in a wastebasket. With the two-wastebasket system, recyclable paper is placed by the generator in one desk-side wastebasket, and all other waste is placed in another. In the centralized container system, large containers for the collection of recyclables are placed in centralized locations within the office areas of the building. Nonrecyclable waste is placed in desk-side wastebaskets.

(c) The recommended system is the desk-top system because it is designed to maximize recovery of high value material in an economically feasible manner. While the two-wastebasket system and centralized container system have been implemented with success in isolated instances, data indicate that, on the whole, these systems have experienced high levels of contamination, low levels of participation, and low revenues. The desk-top system has been designed to minimize these problems.

(d) The precise method of separation and collection used to implement the desk-top system will depend upon such things as the physical layout of the individual facility, the ease of collection, and the projected cost effectiveness of using various methods. The recommended desk-top system is carried out in the following manner:

(1) Workers are to deposit high-grade paper into a desk-top tray or other small desk-top holder to be supplied by the agency. This holder should be designed in such a way as to prevent it holding contaminants, such as food or beverage containers.

(2) At the office worker's convenience or when the tray is filled, the worker carries the paper to a conveniently located bulk container within the office area. This large container should be located in an area the worker frequents in the normal course of business.

(3) In locations where computer cards and printouts are to be collected separately, the receptacle for these wastes should be near the computer terminal or in some other logical, centrally located place.

(4) Collection of the high-grade paper from the bulk containers in the office area should be performed by the janitorial or general maintenance service. The number of locations and the frequency of collection of these containers will be determined by office size and maintenance staff capacity.

(e) Mixed paper and some high-grade office papers have also been recovered for recycling by hand-picking in an individual building's trash room or at a centralized facility serving several buildings. With these hand-picking systems, recyclable waste is not separated at the source of generation, but is mixed with other waste in the usual manner and removed to a centralized location where recyclable paper is picked out of the mixed waste by hand. Facilities may choose to use this method of high-grade paper recovery if it is shown by analysis to be economically preferable to source separation.

§ 246.200–6 Recommended procedures: Storage.

Among the alternatives for paper storage are on-site baling, the use of stationary compactors, or storage in corrugated boxes or normal waste containers. Stored paper should be protected from fire, inclement weather, theft, and vandalism.

§ 246.200–7 Recommended procedures: Transportation.

Transportation to market may be supplied by the facility, by a private hauler, or by the purchaser. Collection of the recyclable paper should be on a regular, established schedule.

§ 246.200–8 Recommended procedures: Cost analysis.

After potential markets have been located (but prior to initiation of formal bidding procedures), preliminary determinations of various separation methods, storage, and transportation costs have been made, and estimated tonnages of both recoverable high-grade paper and residual solid waste have been established, an analysis should be conducted which compares the costs of the present waste collection and disposal system with the proposed segregated systems. At a minimum, the study should include all capital, operating and overhead costs and take into account credits for revenue from paper sales and savings from diverting recycled materials from disposal. Potential costs to upgrade collection and disposal practices to comply with EPA's Guidelines for the Storage and Collection of Residential, Commercial and Institutional Solid Wastes (40 CFR Part 243) and Thermal Processing and Land Disposal Guidelines (40 CFR Parts 240 and 241) should be included in the analysis. In formulating a separation system and evaluating its costs, every effort should be made to use janitorial and waste collection resources efficiently. This cost analysis should enable the facility to determine the most cost effective method of implementing the requirement of this part.

§ 246.200–9 Recommended procedures: Contracts.

Formal bids should be requested for purchase of the recovered materials, such bids being solicited in conformance with bidding procedures established for the responsible agency. Contracts should include the buyer's quality specifications,

quantity and transportation agreements, a guarantee that the material will be accepted for one year or more, and a guaranteed minimum purchase price.

§ 246.200–10 Recommended procedures: Public information and education.

A well-organized and well-executed public information and education program explaining the justification, goals, methods and level of separation should be conducted to inform and motivate office personnel and secure their cooperation in separating their waste. This public information and education program should precede the program and continue on a regular basis for its duration.

§ 246.201 Residential materials recovery.

§ 246.201–1 Requirement.

Separation of used newspapers at the source of residential generation in conjunction with separate collection shall be carried out at all facilities in which more than 500 families reside, and the newspapers shall be sold for the purpose of recycling.

§ 246.201–2 Recommended procedures: Newsprint recovery from smaller residential facilities.

The recovery of newsprint generated by residential facilities of less than 500 families should be investigated in conformance with the following recommended procedures and implemented where feasible.

§ 246.201–3 Recommended procedures: Glass, can, and mixed paper separation.

In areas where markets are available, it is recommended that glass, cans, and mixed paper be separated at the source of generation and separately collected for the purpose of recycling.

§ 246.201–4 Recommended procedures: Market study.

An investigation of markets should be made for each material by the organization responsible for sale of recyclable materials in each agency and should include at a minimum:

(a) Identifying potential purchasers of the recovered material through standard market research techniques.

(b) Directly contacting buyers and determining the buyers' quality specifications, potential transportation agreements and any minimum quantity criteria.

(c) Determining the prices that the buyer will pay for the recovered material and the willingness of the buyer to sign a contract for the purchase of the material at guaranteed minimum prices.

§ 246.201–5 Recommended procedures: Methods of separation and collection.

Following separation within the home, any of the following methods of collection may be used:

(a) Materials may be placed at the curbside by the resident and may be collected from each household using separate trucks or compartmentalized vehicles.

(b) For multi-family dwelings, separated materials may be placed in bulk containers located outside of the building and collected by trucks dispatched to collect recyclables.

(c) Collection stations may be set up at convenient locations to which residents bring recyclables. These stations should provide separate bulk containers for each item to be recycled. The size and type of container will depend on the volume and type of material collected, the method of transportation to be used in hauling the materials to market and the frequency of removal.

§ 246.201–6 Recommended procedures: Transportation to market.

Transportation to market may be supplied by the facility or the community generating the waste, by a private hauler, or by the purchaser.

§ 246.201–7 Recommended procedures: Cost analysis.

After potential markets have been located (but prior to initiation of formal bidding procedures), preliminary determinations of various separation methods, storage and transportation costs have been made, and estimated tonnages of both recoverable materials and residual solid waste have been established, an analysis should be conducted which compares the costs of the present waste collection and disposal system with the proposed segregated systems. At a minimum this study should include all capital, operating and overhead costs and take into account credits for revenue from paper sales and savings from diverting recycled materials from disposal. Potential costs to upgrade collection and disposal practices to comply with EPA's Guidelines for the Storage and Collection of Residential, Commercial and Institutional Solid Wastes (40 CFR Part 243) and Thermal Processing and Land Disposal Guidelines (40 CFR Parts 240 and 241) should be included in the analysis. In formulating a separate collection system and evaluating its costs, every effort should be made to use idle equipment and underutilized collection manpower to reduce separate collection costs. This cost analysis should enable the facility to determine the most cost effective method if implementing the requirements of this part.

§ 246.201–8 Recommended procedures: Contracts.

Formal bids should be requested for purchase of the recovered materials, such bids being solicited in conformance with bidding procedures established for the responsible jurisdiction. Contracts rial will be accepted for one year or more should include the buyer's quality specifications, quantity and transportation agreements, a guarantee that the mate- and a guaranteed minimum purchase price.

§ 246.201–9 Recommended procedures: Public information and education.

A well organized and well executed public information and education program explaining the justification, goals, methods and level of separation should be conducted to inform and motivate householders and to secure their cooperation in separating their waste. This public information and education program should precede the program and continue on a regular basis for its duration.

§ 246.202 Corrugated container recovery.

§ 246.202–1 Requirement.

Any commercial establishment generating 10 or more tons of waste corrugated containers per month shall separately collect and sell this material for the purpose of recycling.

§ 246.202–2 Recommended procedures: Corrugated container recovery from smaller commercial facilities.

The recovery of corrugated containers from commercial facilities generating less than 10 tons per month should be investigated in conformance with the following recommended procedures and implemented where feasible.

§ 246.202–3 Recommended procedures: Market study.

An investigation of markets should be made by the organization responsible for sale of recyclable material in each Federal agency and should include at a minimum:

(a) Identifying potential purchasers of the recovered corrugated through standard market research techniques.

(b) Directly contacting buyers and determining the buyers' quality specifications, potential transportation agreements and any minimum quantity criteria.

(c) Determining the price that the buyer will pay for the recovered corrugated and the willingness of the buyer to sign a contract for purchase of the paper at a guaranteed minimum price.

§ 246.202–4 Recommended procedures: Methods of separation and storage.

The method selected will depend upon such variables as the physical layout of the individual generating facility, the rate at which the corrugated accumulates, the storage capacity of the facility and the projected cost-effectiveness of using the various methods. All of the following suggested modes of separation and storage presuppose that the corrugated boxes will be accumulated at a central location in the facility after their contents are removed and that the boxes are flattened.

(a) Balers of various sizes: corrugated boxes are placed in balers and compacted into bales. These bales may be stored inside or outside of the facility. The bales should be protected from fire, inclement weather, theft, and vandalism.

(b) Stationary compactors or bulk containers: corrugated boxes are placed in a stationary compactor or bulk con-

tainers outside of the facility. The containers should be protected from fire, inclement weather, theft and vandalism

§ 246.202–5 Recommended procedures: Transportation.

Transportation to market may be supplied by either the facility, a private hauler or the purchaser. In facilities to which goods are delivered from a central warehouse, corrugated may be backhauled by delivery trucks to the central facility and baled there for delivery to a user.

§ 246.202–6 Recommended procedures: Cost analysis.

After potential markets have been identified (but prior to initiation of formal bidding), preliminary determinations of various separation methods, storage and transportation costs have been made, and estimated tonnages of both recoverable material and residual solid waste have been established, an analysis should be conducted which compares the costs of the present waste collection and disposal system with the proposed segregated systems. At a minimum, the study should include all capital, operating and overhead costs and take into account credits for revenue from paper sales and savings from diverting recycled materials from disposal. Potential costs to upgrade collection and disposal practices to comply with EPA's Guidelines for the Storage and Collection of Residential, Commercial and Institutional Solid Wastes (40 CFR Part 243) and Thermal Processing and Land Disposal Guidelines (40 CFR Parts 240 and 241) should be included in the analysis. This cost analysis should enable the facility to determine the most cost effective method of implementing these guidelines.

§ 246.202–7 Recommended procedures: Establishment of purchase contract.

Formal bids should be requested for purchase of the recovered materials, such bids being solicited in conformance with bidding procedures established for the responsible agency. Contracts should include the buyer's quality specifications, transportation agreements, a guarantee that the material will be accepted for one year or more and a guaranteed minimum purchase price.

§ 246.203 Reevaluation.

§ 246.203–1 Requirement.

Agencies in which facilities make the determination not to comply with these guidelines must conduct the required analysis and report in accordance with § 246.100 (e) or (f), as appropriate, yearly.

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[FR Doc.76–11864 Filed 4–22–76;8:45 am]

Title 29—Labor

CHAPTER V—WAGE AND HOUR DIVISION, DEPARTMENT OF LABOR

PART 723—THE LAUNDRY AND CLEANING INDUSTRY IN PUERTO RICO

Wage Order

Pursuant to sections 5, 6, and 8 of the Fair Labor Standards Act of 1938 (52 Stat. 1062, 1064, as amended (29 U.S.C. 205, 206, 208)), including the Fair Labor Standards Amendments of 1974 (Pub. L. 93–259; 84 Stat. 35), and Reorganization Plan No. 6 of 1950 (3 CFR 1949–53 Comp., p. 1004), and by means of Administrative Order No. 641 (40 FR 58867), the Secretary of Labor appointed and convened Industry Committee No. 130 for the Laundry and Cleaning Industry in Puerto Rico, referred to the Committee the question of the minimum rate or rates of wages to be paid under sections 6 (b) and (c) of the Act to such employees, and gave notice of a hearing to be held by the Committee.

Subsequent to an investigation and a hearing conducted pursuant to the notice, the Committee has filed with the Administrator of the Wage and Hour Division of the Department of Labor a report containing its findings of fact and recommendations with respect to the matters referred to it.

Accordingly, as authorized and required by section 8 of the Fair Labor Standards Act of 1938, Reorganization Plan No. 6 of 1950, and 29 CFR 511.16, the recommendations of Industry Committee No. 130 are hereby published, revising § 723.2 of Part 723, Title 29, Code of Federal Regulations. The increases in future wage rates prescribed by section 6(c) of the 1974 Fair Labor Standards Amendments are set forth in this wage order.

As revised, § 723.2 reads as follows:

§ 723.2 Wage rates.

(a) Wages at rates not less than those prescribed in this section shall be paid under section 6(c) of the Fair Labor Standards Act of 1938 by every employer to each of his employees in the industry who in any workweek is engaged in commerce or in the production of goods for commerce or is employed in an enterprise engaged in commerce or in the production of goods for commerce as those terms are defined in section 3 of the Act.

(b) The minimum wage for this industry is $1.90 an hour for the period ending April 30, 1976. Under section 6(c)(2) the rate will be increased by $0.15 an hour to $2.05 on May 1, 1976. The committee directs a further 10 cents increase to take effect on January 1, 1977, raising the rate to $2.15 an hour. Subsequently, the rate will, by reason of section 6(c)(2), be increased to $2.30 an hour on May 1, 1977.

(Secs. 5, 6, 8, 52 Stat. 1062 and 1064, as amended; 29 U.S.C. 205, 206, 208.)

Effective date: The effective date of this revision is May 9, 1976.

Signed at Washington, D.C. this 16th day of April.

RONALD J. JAMES,
Administrator, Wage and Hour Division, U.S. Department of Labor.

[FR Doc.76–11808 Filed 4–22–76;8:45 am]

PART 724—THE HOSPITAL AND RELATED INSTITUTIONS INDUSTRY IN PUERTO RICO

Wage Order

Pursuant to sections 5, 6, and 8 of the Fair Labor Standards Act of 1938 (52 Stat. 1062, 1064, as amended (29 U.S.C. 205, 206, 208)), including the Fair Labor Standards Amendments of 1974 (Pub. L. 93–259; 84 Stat. 35), and Reorganization Plan No. 6 of 1950 (3 CFR 1949–53 Comp., p. 1004), and by means of Administrative Order No. 641 (40 FR 58867), the Secretary of Labor appointed and convened Industry Committee No. 129–B for the Hospital and Related Institutions Indus-

federal register

TUESDAY, SEPTEMBER 21, 1976

PART III:

ENVIRONMENTAL PROTECTION AGENCY

■

RESOURCE RECOVERY FACILITIES

Guidelines

APPENDIX D

Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 603-2]

PART 245—PROMULGATION RESOURCE RECOVERY FACILITIES GUIDELINES

BACKGROUND

On January 15, 1976 notice was published in the FEDERAL REGISTER (41 FR 2359) proposing regulations to establish a new part 245 of Chapter I of Title 40 of the Code of Federal Regulations pursuant to the authority of Section 209(a) of the Solid Waste Disposal Act of 1965 (Pub. L. 89-272), as amended by the Resource Recovery Act of 1970 (Pub. L. 91-512). Section 209 of the amended Act requires the Administrator of the U.S. Environmental Protection Agency (EPA) to "recommend to appropriate agencies and publish in the FEDERAL REGISTER guidelines for solid waste recovery, collection, separation, and disposal systems (including systems for private use), * * *" In addition, section 211 mandates that Federal agencies having jurisdiction over solid waste disposal activities "shall insure compliance with the guidelines recommended under section 209 and the purpose of [the Solid Waste Disposal Act]. * * *"

In fulfillment of its responsibilities under section 209, EPA promulgated the first set of guidelines: "Guidelines for the Thermal Processing and Land Disposal of Solid Wastes," on August 14, 1974 (40 CFR 240 and 241). Since that time, guidelines have been promulgated for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste on February 13, 1976 (40 CFR 243), and for Source Separation for Material Recovery on April 23, 1976 (40 CFR 246) and published in proposed form for public comment in the FEDERAL REGISTER on November 13, 1975 for "Beverage Containers" (40 FR 52967). In addition, non-mandatory guidelines for "Procurement of Products that Contain Recycled Material" were published in the FEDERAL REGISTER on January 15, 1976 (40 CFR 247).

The promulgation of these guidelines will meet the Administrator's initial obligation under Section 209 to publish guidelines in the area of solid waste recovery and separation systems. The EPA intends to revise and supplement these guidelines in the future, in recognition of the specific statutory language of section 209 that guidelines "shall be revised from time to time."

Section 211 of the Act and Executive Order 11752 make the "Requirements" section of the guidelines mandatory upon Federal agencies. The recommendatory sections of the guidelines present methods and techniques which amplify or supplement the mandatory requirements. These sections contain desirable, but not essential, procedures useful for attaining the purposes of the Act.

As provided in section 211 of the Act and section 3(a) of Executive Order 11752, heads of Federal agencies are ultimately responsible for determining which facilities under their jurisdiction shall comply with the guidelines. Pursuant to its authority in section 3(d) of EO 11752, EPA has required that each decision not to establish or utilize a resource recovery facility must be justified in a report to the Administrator and the public. The specific requirements for this report may be found in the "Scope" section of the guideline.

Since each Federal agency carries out a wide variety of activities, each with associated policy and economic considerations, EPA cannot require agencies to carry out specific actions. Rather EPA has set objectives in the guidelines, allowing each agency to determine for itself the means of accomplishing these objectives by utilizing information provided in the recommended procedures and bibliography and by utilizing technical assistance provided by the EPA.

The economic and inflationary impact of these guidelines has been carefully evaluated. It has been determined that the effects will be minor and that these guidelines are not a "major action" requiring an inflation impact statement as prescribed by Executive Order 11821 and OMB Circular A-107.

INTRODUCTION

These guidelines provide requirements and recommended procedures for the establishment and utilization by Federal agencies of facilities to recover resources from residential, commercial, or institutional solid wastes, and recommend the establishment and utilization of such facilities to State, interstate, regional, and local governments. Utilization of resource recovery facilities will result in conservation of resources and in a reduction in the amount of solid waste that requires disposal.

PUBLIC COMMENT

Written comments on the proposed guidelines were invited and were received from 21 sources. The commenters addressed 69 issues which fell into 21 categories. As a result of these written comments and in an effort to clarify the guidelines, certain changes were made. All of the written comments and the Agency's disposition of each comment are on file with the Agency and are available for public examination at the EPA Public Information Reference Unit (EPA Library), 401 M Street, SW., Washington, D.C. during normal business hours. The major issues raised by the commenters and the Agency's consideration of them are described below.

Compatibility, Technology and Cost. 25 comments were received concerning the compatibility of the resource recovery facilities guidelines with waste reduction and source separation techniques, and questioning the cost and availability of technology for resource recovery facilities. Technology, cost and compatibility are interdependent and must be considered as interrelated parts of a solid waste management system. They must also be examined in light of the Congressional mandate for solid waste management by Federal agencies. The Congress intended that Federal agencies should take a leadership role in solid waste management, as indicated by the legislative history of section 211 of the Resource Recovery Act of 1970.

> Federal agencies are inclined to place important environmental quality control functions in a subordinate role to mission. This is no longer appropriate or acceptable. Federal agencies which generate volumes of waste have a correlative responsibility to request appropriations from Congress necessary to properly manage such waste as part of their normal operating expenses. The public will not tolerate the excuse that budget restrictions prevent compliance with waste management standards and guidelines; it is abundantly clear that the provisions of the environmental control laws do not permit the same excuse to be advanced by individuals or private organizations. Federal agencies must take the lead in overcoming the reluctance to invest funds necessary to control solid waste pollution. Senate Report No. 91-1084, Senate Committee on Public Works, 91st Congress, 2nd Session (1970) at p. 14.

Compatibility of Guidelines. There is some overlap in the coverage between these guidelines for resource recovery facilities, the "Source Separation for Materials Recovery Guidelines" and the "Beverage Container Guidelines." Numerous comments were received on the issues of reducing waste and separating waste at the source. Some wanted EPA to require that only waste reduction and source separation measures be taken in the field of solid waste management, while others wanted all waste to be disposed of in resource recovery facilities in lieu of waste reduction and source separation measures.

It is the intent of EPA that agencies should carry out waste reduction, as outlined in the "Beverage Container Guidelines," source separation, as outlined in the "Source Separation for Materials Recovery Guidelines" and recovery of energy and materials as outlined in these guidelines, to the maximum extent possible. After waste reduction and source separation of paper, the remaining wastes should be processed when possible in accordance with these guidelines. Implementation of all three guidelines will result in maximum conservation benefit to the country and economic savings to the government. Additionally, it is desirable and is the clear intent of Congress that the Federal government take a leadership role in the demonstration of techniques for the reduction of waste, the separation of materials at the source, and the utilization of resource recovery facilities.

There may be circumstances where the source separation and recycling of high-grade paper, corrugated containers, or newspaper is economically impracticable due to inability to sell the recovered materials or due to unreasonably high costs. Under such circumstances agencies may choose to recover these materials in centralized recovery facilities or through conversion into energy. The rationale and analysis supporting a decision to choose this form of recovery instead of source separation must be reported to the Administrator under these guidelines.

Technology. There are several systems for recovering materials and energy from solid waste, and these are in various stages of development. The Environmental Protection Agency is participating in the full-scale demonstration of several resource recovery systems under the authority of Section 208(a) of the Solid Waste Disposal Act, as amended. Many communities are designing and building systems patterned after these demonstrations. There is a significant amount of research, development, and system implementation in this field on the part of private industry, universities, States, municipalities, and the Federal Government. (For detailed discussions of the technology involved, see the recommended bibliography at the end of these guidelines).

These guidelines do not recommend any specific technology or system for the recovery of materials or energy because no one system is best under all circumstances. Many different approaches to recovering the energy and materials value from solid waste are presently being examined in a wide variety of communities throughout the country. Not until the investigations recommended in these guidelines have been completed in a thorough manner can a community, agency, or other appropirate entity, considering its disposal and market situation, decide which method will be of greatest benefit. EPA has published a Resource Recovery Implementation Guide that will assist agencies in determining the feasibility of implementing resource recovery, in making the system selection decision, in procuring the selected system, and in marketing the output products.

Determination of Economic Practicability. The legislative history of the Solid Waste Disposal Act, as amended, indicates that if was the intent of Congress that Federal agencies should comply with resource recovery guidelines even when guidelines implementation costs are more than previous solid waste management practices. (Senate Report No. 91-1034, Senate Committee on Public Works, 91st Congress, 2nd Session (1970) at p. 14). However, neither the law nor the legislative history indicates how much additional cost is tolerable. It is not the intent of EPA that resource recovery systems be built in unreasonably uneconomical situations. Therefore, the guidelines state that a valid reason for not implementing a resource recovery system would be that costs of implementation are so high as to be economically impracticable. The baseline for determining comparative cost is the cost of complying with the provisions of the "Thermal Processing and Land Disposal of Solid Waste Guidelines" (40 CFR 240 and 241) or the price paid for comparable service under contract. An agency making the judgment whether or not to proceed with a resource recovery system must consider both the base line cost and the Congressional intent.

The precedent for incurring additional costs in order to gain environmental benefits has been clearly established. Section 15(c)(1) of the Noise Control Act (Pub. L. 92-574) requires the procurement of certified low-noise-emission products in lieu of other products if the costs are no more than 125 percent higher. Sections 212G(e) (1) and (2) of the Clean Air Act (Pub. L. 91-604) require the procurement of certified low-emission vehicles in lieu of others if their cost is no more than 150 percent higher and authorize a premium of 200 percent in special instances. The proposed guidelines established a "benchmark" of twice the cost of present environmentally approved solid waste disposal methods as a reasonable cost for resource recovery. After consideration of comments to the effect that the two times cost benchmark could be counterproductive in cases where present disposal costs are low and could have grave economic impact where disposal costs are very high, EPA decided to eliminate any specific reference to cost and to allow each agency to make the economic determination on a case by case basis. Section 245.200-1(f) was changed to reflect this approach.

Facility Size. Several comments were received questioning the minimum size of the resource recovery facilities. These guidelines require all Federal agencies that have jurisdiction over facilities, the operation of which involves disposal of 100 tons or more of solid waste per day after complying with the "Beverage Container" and "Source Separation" guidelines to establish or utilize resource recovery facilities. It should be noted that this tonnage figure is intended to indicate the level above which the establishment or utilization of a resource recovery facility must be investigated. It is neither the intent of these guidelines to require Federal agencies to build resource recovery facilities in unreasonably uneconomical situations, nor to eliminate resource recovery activities at small installations. It is the intent of the guidelines that a resource recovery facility be established or utilized by those Federal facilities which are generating sufficient volumes of solid waste to make resource recovery practicable.

Integration with State and Local Plans. One commenter was concerned with how the establishment of a Federal Resource Recovery Facility would affect local resource recovery efforts. Section 245.200-1(c) was changed in light of this comment to require that resource recovery facilities established as a result of these guidelines be compatible with State and local solid waste management plans.

Processing Percentage. Several comments were received concerning the requirement that established the processing percentage. The commenters assumed, correctly, that a 65 percent resource recovery potential indicated that some specific type of energy recovery technology would be used. One comment pointed out that there was a possibility that energy recovery might not be environmentally sound in certain areas and, therefore, that the 65 percent capability would not be met. Another comment indicated that as the guideline was written, the 65 percent was an all or nothing situation. Obviously, if establishing a resource recovery facility that will process 65 percent of the incoming waste into a marketable product is constrained by other environmental regulations and it is economically impracticable to comply with all environmental regulations, then the provisions of § 245.100(g) would apply. Additionally, in order to provide more flexibility in the 65 percent requirement, § 245.200-1(e) has been changed to allow the establishment of resource recovery facilities that will process less than 65 percent of the incoming waste into a marketable product when the 65 percent criterion cannot be met because of high cost or the inability to market the output products.

Lead Agency and Responsibility. Because of the difficulty in determining which agency within an SMSA should assume the role of lead agency, EPA has changed the procedures to be used in establishing the lead. The Administrator will analyze agency disposal tonnages and other factors and establish the lead agency in each SMSA. Sections 245.100 (g) and (h), and 245.200-1(b) have been changed to reflect this.

The responsibility for implementation of these guidelines has been clarified by changing some wording to match the wording in the Solid Waste Disposal Act of 1965 as amended (Pub. L. 89-272). Sections 245.100(d), 245.101(b), 245.200-1(a), 245.200-1(b), 245.200-2(a) and 245.200-2(b) were changed to reflect the wording of the Act.

ACTION

These guidelines are issued under the Authority of Section 209(a) of the Solid Waste Disposal Act of 1965 (Pub. L. 89-272) as amended by the Resource Recovery Act of 1970 (Pub. L. 91-512).

Chapter I of Title 40 of the Code of Federal Regulations is amended by adding a new Part 245.

RUSSELL E. TRAIN,
Administrator.

SEPTEMBER 10, 1976.

Subpart A—General Provisions

Subpart B—Requirements and Recommended Procedures

Subpart A—General Provisions

§ 245.100 Scope.

(a) These guidelines are applicable to the recovery of resources from residential, commercial, or institutional solid wastes.

(b) The "Requirement" sections contained herein delineate minimum actions for Federal agencies for planning and establishing resource recovery facilities. Pursuant to section 211 of the Solid Waste Disposal Act, as amended, and

Executive Order 11752, the "Requirement" sections of this guideline are mandatory for Federal agencies. In addition, they are recommended to State, interstate, regional, and local governments for use in their activities.

(c) The "Recommended Procedures" sections are presented to suggest additional actions or preferred methods by which the objectives of the requirements can be realized. The "Recommended Procedures" are not mandatory for Federal agencies.

(d) These guidelines apply to all Federal agencies that have jurisdiction over any real property or facility the operation or administration of which involves such agency in residential, commercial or institutional solid wastes disposal activities either in-house or by contract. Federal land that is used solely for the disposal of non-Federal solid waste is not considered real property or a facility for the purpose of these guidelines.

(e) The Environment Protection Agency will render technical assistance and other guidance to Federal agencies when requested to do so pursuant to section 3 (d) 1 of Executive Order 11752.

(f) Within one year after the final promulgation of these guidelines, agencies shall make a determination as to what actions will be taken to establish a resource recovery facility in accordance with these guidelines and shall, within 60 days of such determination, submit to the Administrator a schedule of such actions.

(g) In order for the Administrator to establish the lead agency in each Standard Metropolitan Statistical Area (SMSA) as addressed in § 245.200–1(b), each Agency shall provide the Administrator within 60 days after the final promulgation of these guidelines the following information:

List of all real property or facilities by SMSA that the agency has jurisdiction over, the operation or administration of which involves such agency in residential, commercial or institutional solid wastes disposal activities, either in-house or by contract, in amounts of more than one ton of solid waste per day (equivalent to 260 tons or more annually) after implementation of other Federal guidelines for waste reduction and source separation and that amount of solid waste.

(h) Within 90 days after final promulgation of these guidelines, the Administrator will establish the lead agency in each SMSA.

(i) Federal agencies that make the determination not to establish or utilize a resource recovery facility shall make a report to the Administrator fully explaining that determination. The Administrator shall publish in the FEDERAL REGISTER notice of the availability of this report to the public. In making this determination, agencies must consider energy conservation, environmental factors, and natural resource conservation as well as cost. Trade-offs between these factors must be analyzed prior to the decision not to establish or utilize a resource recovery facility. As all of these factors can be reduced to cost, the following are considered to be valid reasons for not establishing or utilizing a resource recovery facility when supported by individual facts and circumstances:

(1) Costs so high as to render establishing a resource recovery facility economically impracticable; or

(2) Inability to sell the recovered products due to lack of market.

(i) The report required by this section shall contain:

(A) A description of alternative actions considered with emphasis on those alternatives that involve resource recovery, and any actions that would preclude establishing or utilizing a resource recovery facility.

(B) A description of ongoing actions which will be continued and new actions taken or proposed. This statement should identify all agency facilities that will be affected by these actions including a brief description of how these facilities will be affected.

(C) An analysis of the action chosen by the agency including supporting technical data, market studies, and policy considerations so that the factors influencing the decision not to establish a resource recovery facility are clear.

(ii) The report required by this section shall be submitted to the Administrator as soon as possible after a final agency determination has been made not to establish or utilize a resource recovery facility, but in no case later than sixty days after such final determination. The Administrator shall indicate to the agency in writing his concurrence or disagreement with the agency's decision, including his reasons therefor.

(iii) Implementation of actions that would preclude establishing or utilizing a resource recovery facility shall be deferred for 60 days, from the Agency's receipt of the report required by § 245.100 (g), in order to give the Administrator an opportunity to receive, analyze and seek clarification of the report.

(iv) It is recommended that where the report required by this section concerns an action for which an Environmental Impact Statement (EIS) is required by the National Environmental Policy Act, that the report be circulated together with the EIS.

§ 245.101 Definitions.

As used in these guidelines:

(a) "Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other such non-manufacturing activities, and non-processing waste generated at industrial facilities such as office and packing wastes.

(b) "Disposal" means the collection, storage, treatment, utilization, processing, or final disposal of solid waste.

(c) "Facility" means any building, installation, structure, or public work owned by or leased to the Federal Government. Ships at sea, aircraft in the air, land forces on maneuvers, other mobile facilities, and U.S. Government installations located on foreign soil are not considered "Federal facilities" for the purpose of these guidelines.

(d) "Infectious waste" means: (1) Equipment, instruments, utensils, and fomites (any substance that may harbor or transmit pathogenic organisms) of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies; (2) laboratory wastes, such as pathological specimens (e.g., all tissues, specimens of blood elements, excreta, and secretions obtained from patients or laboratory animals) and disposable fomites attendant thereto; (3) surgical operating room pathologic specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms.

(e) "Institutional solid waste" means solid wastes originating from educational, health care, correctional, and other institutional facilities.

(f) "Pyrolytic gas and oil" means gas or liquid products that possess useable heating value that is recovered from the heating of organic material (such as that found in solid waste), usually in an essentially oxygen-free atmosphere.

(g) "Recoverable resources" means materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes.

(h) "Recovery" means the process of obtaining materials or energy resources from solid waste.

(i) "Recycled material" means a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product.

(j) "Recycling" means the process by which recovered materials are transformed into new products.

(k) "Residential solid waste" means the garbage, rubbish, trash, and other solid waste resulting from the normal activities of households.

(l) "Resource recovery facility" means any physical plant that processes residential, commercial, or institutional solid wastes biologically, chemically, or physically, and recovers useful products, such as shredded fuel, combustible oil or gas, steam, metal, glass, etc. for recycling.

(m) "Tons per day" means annual tonnage divided by 260 days.

Subpart B—Requirements and Recommended Procedures

§ 245.200 Establishment or Utilization of resource recovery facilities.

§ 245.200–1 Requirements.

(a) A Federal agency that has jurisdiction over any real property or facility the operation or administration of which involves such agency in residential, commercial or institutional solid wastes disposal activities either in-house or by contract in amounts of 100 tons or more per day (equivalent to 26,000 tons or more annually) after implementation of other Federal guidelines for waste reduction and source separation shall establish or utilize resource recovery facilities to separate and recover materials or energy or both from such solid waste.

(b) If any one Federal agency within a Standard Metropolitan Statistical Area that has jurisdiction over any real prop-

erty or facility the operation or administration of which involves such agency in residential, commercial, or institutional solid wastes disposal activities either in-house or by contract in amounts of 50 tons or more per day (equivalent to 13,000 tons or more annually) after implementation of other Federal guidelines for waste reduction and source separation, and if the combined total of these solid wastes for all Federal agencies within the SMSA is 100 tons or more per day (equivalent to 26,000 tons or more annually) after implementation of other Federal guidelines for waste reduction and source separation, all Federal agencies within the SMSA shall establish or utilize one or more resource recovery facilities to separate and recover materials or energy or both from this solid waste. The agency that has jurisdiction over the disposal of the largest quantity of residential, commercial, or institutional solid wastes in the SMSA shall be designated the lead agency by the Administrator of EPA in the resource recovery facility planning process. The lead agency shall be responsible for planning, organizing, and managing the joint resource recovery activities of the agencies in the SMSA and shall report the compliance decision of the agencies in the SMSA in accordance with subparagraph 245.100 (f) or (i), as appropriate, in a consolidated report. All other agencies in the SMSA shall assist in planning such resource recovery activities.

(c) Agencies shall consult with appropriate State and local agencies, and with concerned local citizens and environmental groups prior to initiation of market analysis and facility design and construction to determine what effects the project might have on local, regional, and State solid waste management plans for the area and to determine the extent of prior resource recovery planning for the area. Resource recovery facilities established as a result of these guidelines shall be compatible with such plans.

(d) Resource recovery facilities established or utilized as a result of these guidelines shall be designed with a capacity sufficient to process at least all of the residential, commercial, or institutional solid wastes disposed of after implementation of other Federal guidelines for waste reduction and source separation, by the agencies that have jurisdiction over the Federal facilities that will utilize the resource recovery facility.

(e) Resource recovery facilities established or utilized as a result of these guidelines shall be designed to process at least 65 percent by wet weight of the input solid waste into recycled material, fuel, or energy. Thus, the weight of the unmarketable residue shall be no more than 35 percent by wet weight of the input solid waste. If inability to meet the 65 percent criteria is based on circumstances as stated in § 245.100(i) then the processing percentage shall be as great as practicable within those circumstances.

(f) An agency may determine, under § 245.100(i) not to establish or utilize a resource recovery facility when after appropriate analysis it is determined that markets for recovered products are not available, or that the cost of the resource recovery system would be so high as to be economically impracticable.

(g) Agencies that make the determination not to establish or utilize a resource recovery facility must conduct the analysis required by § 245.100(i) at least every three years and report the decision resulting from this analysis to the Administrator in accordance with Section 245.100 (f) or (i), as appropriate.

(h) In order that the Administrator may fulfill his responsibilities as set forth in EO 11752, section 3 (d,6) to "maintain a continuing review of the implementation of this order," each agency shall, on a yearly basis, submit to the Administrator a report outlining the actions taken by that agency pursuant to these guidelines.

§ 245.200–2 Recommended procedures: Regionalization.

(a) Federal agencies that have jurisdiction over facilities within a geographical area should enter into joint resource recovery ventures among themselves and with nearby communities in order to maximize economies of scale.

(b) If a community near a Federal facility operates or is planning to construct a resource recovery facility, the Federal agency having jurisdiction over that facility should participate as appropriate relative to waste load in the financing, construction, and operation of that facility.

§ 245.200–3 Recommended procedures: Planning techniques.

Planning for the implementation of a resource recovery facility should be performed in a systematic manner. A series of reports have been prepared by the Agency's Office of Solid Waste Management Programs. The series, titled Resource Recovery Plant Implementation; Guides for Municipal Officials, should be used as an aid in the planning phase.

(a) Planning and Overview (SW–157.1) provides a framework for the overall planning phase.

(b) Preceding the selection of a specific resource recovery technology, an investigation of markets should be made. Markets (SE–157.3) lists the markets for the recovered materials and outlines steps to be taken to secure those markets.

(c) The various resource recovery methods are covered in Technologies (SW–157.2).

(d) The economic viability of a specific resource recovery facility should be determined only after all costs are accounted for as outlined in Accounting Format (SW–157.6).

(e) Other reports in this series are:

Financing SW–157.4
Procurement SW–157.5
Risks and Contracts SW–157.7
Further Assistance SW–157.8

These reports may be obtained from: Solid Waste Information Materials Control Section, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

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October 4, 1976
NUMBER 4165.60

ASD(I&L)

Department of Defense Directive

SUBJECT Solid Waste Management - Collection, Disposal, Resource Recovery and Recycling Program

References: (a) DoD Directive 6050.3, "Resource Recovery and Recycling Program - Solid and Other Waste Material," November 19, 1974 (hereby cancelled)
(b) through (u) are listed in enclosure 1

I. PURPOSE AND CANCELLATIONS

A. This Directive incorporates the provisions of reference (a), updating Department of Defense policies and procedures relative to the DoD comprehensive program of solid waste collection, disposal, material recovery, and recycling in consonance with the guidelines published by the U.S. Environmental Protection Agency (EPA) (references (b), (c), (d), and (e)), the National Environmental Policy Act (reference (f)), the Solid Waste Disposal Act (reference (g)), and DoD Directive 5100.50 (reference (h)).

B. Reference (a) and Report Control Symbol DD-H&E(SA) 1359 are hereby superseded and cancelled.

II. APPLICABILITY AND SCOPE

A. The provisions of this Directive apply to the Office of the Secretary of Defense, the Military Departments, and the Defense Agencies (hereinafter referred to collectively as "DoD Components").

B. The processing and selling of scrap and similar material, except high grade paper, as defined in DoD Manual 4160.21-M (reference (i)) and generated from

military and industrial-type activities, are excluded from the provisions of this Directive.

III. DEFINITIONS

For the purposes of this Directive, the definitions contained in enclosure 2 apply.

IV. OBJECTIVES

A. The preservation and protection of the environment.

B. The conservation of natural resources through:

1. Judicious collecting and disposing of solid waste;

2. Reducing the amount of material wasted; and

3. Recovering and recycling materials and/or energy from solid waste products as an alternative to burial in landfills, incineration or environment-menacing dispositions.

V. POLICIES

A. The criteria listed in the "requirement" section(s) of published EPA Solid Waste Management Guidelines (references (b), (c), (d) and (e)) are mandatory for minimum acceptable levels of performance and shall be implemented by the DoD Components. The "recommended" section(s) of the Guidelines, representing current techniques and practices, shall be implemented when feasible and contributory to the effectiveness of the program. Waste disposal on Federal property will be in accordance with appropriate material criteria. Local permits may not be mandatory for Defense installations; however, State and local criteria, if more stringent than EPA Guidelines and/or Defense practices, shall be applied when feasible. Resource recovery facilities established in accordance with the provisions of this Directive will be compatible with appropriate State and local plans.

B. All solid waste generated on a DoD installation shall be considered Government property for purposes of disposal under the provisions of this Directive except in those instances

where Military Exchanges and Commissary Stores salvage and dispose of their recoverable resources.

C. Commercial, residential, and institutional solid and other waste materials shall be recovered and recycled to reduce environmental pollution and conserve resources, consistent with guidelines prescribed herein.

D. The quantities of solid waste materials shall be reduced at the source, whenever possible.

E. Contracts for solid waste material disposal services shall include provisions for recycling, whenever feasible.

F. A DoD facility that generates 100 tons or more per day of residential, commercial and institutional solid waste after complying with waste reduction and source separation policies, shall establish and/or utilize resource recovery facilities to separate and recover materials or energy, or both, from solid waste.

G. DoD facilities located within a Standard Metropolitan Statistical Area (SMSA) are required to participate with other DoD Components and Federal facilities in the establishment and/or utilization of a single resource recovery facility if: (1) any one Federal facility generate 50 tons or more of residential, commercial, and institutional solid waste per day after complying with waste reduction and source separation policies; and (2) the combined total of this solid waste for all Federal facilities within the SMSA is 100 tons per day. The Federal Agency having jurisdiction over a Federal facility that generates the largest quantity of residential, commercial and institutional solid waste in the SMSA will be designated the lead agency in the planning, programing and budgeting for the resource recovery facility in accordance with EPA Guidelines (reference (b)).

H. Joint or regional civilian community resource recovery facilities/systems shall be utilized whenever possible, in lieu of establishing separate DoD facilities/systems.

I. DoD Components shall not compete with a locally available commercial recycling industry which offers a total resource recovery system. Every effort shall be made to use the established commercial industry in accordance with DoD Directive 4100.15 (reference (j)).

J. The separation of used newspapers at the source of residential generation, in conjunction with separate collections, shall be carried out at all DoD installations in which more than 500 families reside. The newspapers shall be recycled or, alternatively, used as an energy resource.

K. Any installation generating 10 or more tons of waste corrugated containers per month shall segregate and separately collect for purposes of recycling or, alternately, used as an energy resource.

L. High grade paper generated in office buildings of over 100 workers shall be separated at the source of generation and collected for the purpose of recycling.

M. At facilities where resource recovery is not mandatory as required by this Directive, optional programs are encouraged. In these instances, the annual cost to the Government should be less when compared to the normal solid waste procedure or disposal.

N. All actions to implement the requirements of this Directive will first be assessed to determine the necessity for preparing an environmental impact statement in accordance with DoD Directive 6050.1 (reference (k)).

VI. PROCEDURES

A. General

1. Solid waste collection, disposal and resource recovery programs will be implemented in the most cost effective manner and periodically reviewed to assure continuing cost effective operation (DoD Instruction 7041.3 (reference (l))). The programs, proposed or ongoing, shall be evaluated under the provisions of DoD Instruction 4100.33 (reference (m)).

2. Alternative methods to processing solid waste through Federally established resource recovery facilities shall be considered in the establishment of local programs and implemented, singly or in combination, if beneficial.

a. Sale through the Defense Supply Agency (DSA).

b. Use as fuel or fuel supplement.

c. Local reuse of recovered waste materials.

d. Joint or separate efforts by contractors handling solid and other waste material to recover recyclable materials.

e. Participation in a joint or regional resource recovery program operated by the civilian community.

3. Prior to implementing procedures for segregating or processing specific waste material for sale, it shall be determined that adequate markets do exist and will continue to exist for a reasonable length of time. Such determination shall include sufficient detailed market analyses and economics to ensure that an economical analysis can be made by the DoD Components.

4. Exceptions to the requirements prescribed by this Directive may be made after appropriate analysis has determined that markets for recovered products are not available or that costs are so high as to be economically impracticable. Analysis in accordance with VI. E. 2., below, must be made and will serve as the basis for required reporting which concern actions taken by the DoD Component pursuant to the EPA Guidelines. Such analyses will be reviewed at least every 3 years.

5. Waste and debris not otherwise utilized in accordance with these procedures are to be disposed of by prescribed EPA Guideline procedures (reference (d)) in authorized landfills and/or incinerators.

B. Organization

1. The DoD Components shall develop the organization for the management and operation of their resource recovery programs. Management of these programs at the installation level will generally be accomplished by the element which is already functionally responsible for refuse collection and disposal (DoD Directive 4165.2 (reference (n)) Recyclable/marketable materials shall be referred to DSA for sale.

2. Duplication of effort shall be avoided in the collecting, sorting, and transporting of recoverable waste by combining new and existing efforts. However, Military Exchanges and Commissary Stores which purchase or lease processing equipment may salvage and dispose of their recoverable resources.

3. The managing activities shall be provided market information for the studies or the sale of recoverable waste material within a reasonable time period.

C. Financial Management

1. Sale of marketable items from solid waste materials shall be administered through DSA under the provisions of DoD Directive 4160.21 (reference (i)). This procedure does not apply to waste materials turned over to voluntary organizations or civilian communities for recycling. The procedure also does not apply to Military Exchanges and Commissary Stores where the activity owns or leases its own processing equipment.

2. Net proceeds from the sale of solid waste materials shall be deposited to the account designated by the managing activity to reimburse the following expenses incurred in operating the solid waste resource recovery programs:

   a. The acquisition of replacement equipment for recycling purposes. The provisions of DoD Instruction 4160.1 (reference (o)) apply in the financing of replacement equipment.

   b. The acquisition and identification of containers and container stands for proper segregation of solid waste material.

   c. The collection of waste materials from the containers.

   d. The separating, baling, compacting, shredding, pulping, or otherwise altering the size, shape or form of the waste materials.

   e. The transfer of marketable items to the accountability of the property disposal office. Transfer of physical

custody is not required, such property shall be moved only when it is most economical and effective to do so.

f. The installation-level administration and support of the above functions by the managing activity.

3. Elements of expense as charged to all activities by the installation-level accounting system are included, but military personnel expense may not be reimbursed from the net proceeds. Any net proceeds after expenses and replacement equipment costs have been reimbursed may be made available by the managing activity to finance special projects for environmental improvement and energy conservation. The amount of such financing for such projects shall not exceed $50,000 per DoD installation. Should any balance be left in the designated account, after the environmental and energy conservation projects are financed, it will be transferred to Budget Account 97-F 3860.5191, "Proceeds from the Sale of Scrap, Salvage, or Surplus Materials, Defense Supply Agency."

4. Solid waste material recycling expenses that are not offset from net proceeds are eligible for reimbursement from any net proceeds remaining in Budget Clearing Account 97-F 3860.5191, "Proceeds from Sale of Scrap, Salvage or Surplus Materials, Defense Supply Agency," after reimbursement of all other categories of disposal expense.

5. Expenses incurred by DSA that are related to the sale of recovered materials shall be deducted from gross sales proceeds. Accounting and reporting procedures for property disposal expenses shall be in accordance with DoD Instruction 7310.1 (reference (p)).

D. Construction Projects and Equipment Procurement

1. Construction projects for resource recovery programs shall be planned and programmed in accordance with DoD Instruction 7040.4 (reference (q)); such projects shall be included in the reports submitted pursuant to OMB Circular A-106 (reference (r)). (See section VIII., this Directive.) Proceeds of sale shall not be used to finance these projects.

2. Each resource recovery facility will be designed with sufficient capacity to process (a) all of the residential,

commercial and institutional solid waste generated by the DoD facilities that will utilize the resource recovery facility, and (b) at least 65 percent by wet weight of the input solid waste into recycled material, fuel or energy. If inability to meet the 65 percent criteria is based on costs so high as to be economically impracticable or lack of market circumstances, then the processing percentage shall be as great as practicable within those circumstances.

3. Use of existing facilities and equipment shall be considered in planning and establishing recycling programs. Equipment, such as balers, available at a Defense installation or activity shall be shared whenever possible to reduce costs.

4. Equipment items for the establishment of recycling programs will be procured through the appropriations normally available for equipment acquisition. The acquisition of replacement equipment, related solely to recycling of solid and other waste materials, is eligible for financing from net proceeds generated by the sale of waste materials. Annual programs for the acquisition of such equipment will be coordinated with the Assistant Secretary of Defense (I&L). The provisions of DoD Directive 5126.15 (reference (s)) shall apply to the acquisition of equipment.

5. The financing of equipment that is jointly used or shared with such activities as the Defense Property Disposal Office or a Commissary store, shall be governed by the procedures applicable to the activity that owns or is accountable for the equipment or facility.

E. EPA Guidelines Implementation

1. Within 1 year from the respective dates of promulgation of the EPA Guidelines (references (b), (c), (d) and (e)), DoD Components shall make a final determination as to what actions shall be taken to comply with them and with the requirements of this Directive and submit to the ASD(I&L) a schedule of said actions. Where prescribed by the individual Guidelines, DoD Components shall submit a report to the ASD(I&L) annually thereafter outlining the actions taken pursuant to the applicable Guidelines.

2. Where the determination is made not to adopt the mandatory

requirements prescribed by the applicable EIA Guidelines (references (b), (c), (d) and (e)), the complete analysis and rationale used by the DoD Component in reaching that determination shall be included in the initial submission to the ASD(I&L). The required analysis shall be conducted at least every 3 years thereafter as appropriate and forwarded to the ASD(I&L) in accordance with section VIII., below. The following points will be addressed in the analysis:

a. A description of ongoing actions, and actions taken or proposed, not in compliance with this Directive. Include a brief description of how specific DoD facilities will be affected.

b. A description of the alternative actions considered. Emphasize those alternatives which, if taken, would be in compliance with this Directive.

c. An analysis in support of the action chosen by the DoD Component. Include technical data, market studies, and policy considerations utilized in arriving at the determination.

4. Following a technical review of the DoD Component's schedule/analysis, the ASD(I&L) shall submit the determination and/or schedule for required interagency coordination.

VII. RESPONSIBILITIES

A. The Assistant Secretary of Defense (Installations and Logistics) shall have primary staff responsibility for this Directive and shall be responsible for:

1. Formulating, developing and monitoring policy for the DoD solid waste management program.

2. Developing implementing policy and monitoring the storage and disposal of recovered materials generated from solid waste materials.

3. Programing, planning, approving design criteria, and

conducting technical reviews of facilities for resource recovery and recycling.

4. Establishing a Joint Service Committee to act in an advisory capacity on solid waste management, resource recovery and recycling matters.

5. Providing necessary interagency coordination with EPA and other Federal Agencies involved in resource recovery and recycling.

6. Providing technical guidance to the other DoD Components concerning the environmental consequences of their solid waste activities that (a) significantly affect the quality of human environment or (b) are environmentally controversial.

B. The Director of Defense Research and Engineering shall be responsible for:

1. Establishing a Defense research, development, test and evaluation (RDT&E) plan to identify interim and long range programs in the resource recovery and conservation areas.

2. Coordinating the RDT&E efforts of the DoD Components in developing systems, equipment and techniques for solid waste management, recycling and resource recovery.

3. Coordinating DoD resource recovery and recycling research with the work of other Federal Agencies.

4. Assuring that consideration is given to resource recovery and recycling in other RDT&E projects and programs.

C. The Secretaries of the Military Departments and the Directors of Defense Agencies shall be responsible for:

1. Identifying those installations which should establish resource recovery programs in accordance with the policies and procedures set forth in this Directive.

2. Budgeting and financial planning for approved programs which provide for solid waste management, collection, disposal, recycling and resource recovery, consistent with the provisions of this Directive and with mission requirements.

D. The Director of the Defense Supply Agency, in addition to VII. C., above, shall be responsible for:

1. Determining market availability for recoverable resources, as well as estimated length of market availability, and furnishing this information to DoD Components within a reasonable time period prior to the establishment of recycling programs.

2. Negotiating sales contracts for marketable materials recovered from the solid waste as well as contracts for sale of solid waste to public or commercial resource recovery operations.

VIII. REPORTS

A. The reporting requirements prescribed by OMB Circular A-106 (reference (r)) and further outlined in VI. D. 1., have been determined to be exempt from interagency approval pursuant to subparagraph 7. d. (2)(a), OMB Circular A-40 (reference (t)). Construction projects prescribed for resource recovery programs under the provisions of this Directive shall be included with the OMB Circular A-106 (reference (r)) projects reported under RCS DD-I&L(SA)1383.

B. Requirements concerning the solid waste management program implementation and operation reporting are summarized in VI. E. above. For DoD management and control, the assigned Report Control Symbol is DD - I&L (A&AR) 1435 for submission of the required reports to ASD(I&L).

C. The statutory language of Section 612 of Public Law 93-552 (reference (u)) has been interpreted to mean the proceeds from the sale of recyclable material recovered from solid wastes as encompassed within the provisions of the Directive. Accordingly, the Secretary of each Military Department shall report to Congress annually concerning, as a minimum, the proceeds received from sales of the recovered materials, expenses incurred in this program, the number and costs of projects for environmental improvement and energy conservation, and any remaining proceeds transferred to the prescribed

Budget Account 97-F 3860.5191. A copy of this report shall be provided ASD(I&L) concurrently with its formal transmission to Congress. For DoD management and control, the assigned Report Control Symbol is DD - I&L (A) 1436 for submission of the required reports to Congress.

IX. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Three copies of implementing instructions shall be forwarded to the Assistant Secretary of Defense (I&L) within 90 days.

W. P. Clements, Jr.
Deputy Secretary of Defense

Enclosures - 2
1. References
2. Definitions

REFERENCES, Continued

(b) U.S. Environmental Protection Agency, "Solid Waste Management Guidelines - Resource Recovery Facilities," 40 CFR 245, September 21, 1976
(c) U.S. Environmental Protection Agency, "Solid Waste Management Guidelines - Solid Waste Storage and Collection," 40 CFR 243, March 15, 1976
(d) U.S. Environmental Protection Agency, "Solid Waste Management Guidelines - Thermal Processing and Land Disposal," 40 CFR 240 and 241, August 14, 1974
(e) U.S. Environmental Protection Agency (EPA), "Solid Waste Management Guidelines-Source Separation for Materials Recovery," 40 CFR 246, May 24, 1976
(f) National Environmental Policy Act of 1969, 42 U.S.C. 4321 et, seq.
(g) Solid Waste Disposal Act, as amended, 42 U.S.C. 3251 et seq. (1970)
(h) DoD Directive 5100.50, "Protection and Enhancement of Environmental Quality," May 24, 1973
(i) DoD Manual 4160.21-M, "Defense Disposal Manual," June 1973. Authorized by DoD Directive 4160.21, February 23, 1972
(j) DoD Directive 4100.15, "Commercial or Industrial Activities," July 8, 1971
(k) DoD Directive 6050.1, "Environmental Considerations in DoD Actions," March 19, 1974
(l) DoD Instruction 7041.3, "Economic Analysis and Program Evaluation for Resource Management," October 18, 1972
(m) DoD Instruction 4100.33, "Commercial or Industrial Activities - Operation of," July 16, 1971
(n) DoD Directive 4165.2, "DoD Real Property Maintenance Activities Program," February 21, 1976
(o) DoD Instruction 4160.1, "Nonexcess Personal Property to be Sold or Exchanged for Replacement Purposes," March 23, 1971
(p) DoD Instruction 7310.1, "Accounting and Reporting for Property Disposal and Proceeds from Sale of Disposable Personal Property and Lumber or Timber Products," July 10, 1970
(q) DoD Instruction 7040.4, "Military Construction Authorization and Appropriation," July 16, 1971

(r) OMB Circular A-106, "Reporting Requirements in Connection With the Prevention, Control, and Abatement of Environmental Pollution at Existing Federal Facilities," December 31, 1974

(s) DoD Directive 5126.15, "Delegation of Authority with Respect to Facilities and Equipment for Metal Scrap Baling or Shearing, or for Melting or Sweating Aluminum Scrap," March 13, 1970

(t) OMB Circular A-40, "Management of Federal Reporting Requirements," May 3, 1973

(u) Public Law 93-552, "Military Construction Authorization Act, 1975," December 27, 1974

DEFINITIONS

A. Commercial Solid Waste. All types of solid waste generated by stores, offices, clubs, cafeterias, mess halls, warehouses and other such nonmanufacturing activities, and nonprocessing waste generated at industrial facilities such as office and packing wastes. Construction and demolition wastes are not included in this category.

B. DoD Facility. Any building, installation, structure, land or public work owned by or leased to a DoD Component. Ships at sea, aircraft in the air or forces on maneuvers are not subject to this Directive.

C. High grade Paper. Includes letterhead, dry copy papers, miscellaneous business forms, stationery, typing paper, tablet sheets and computer printout paper and cards, commonly sold as "white ledger," "computer printout," and "tab card" grade by the wastepaper industry. Consistent with EPA guidelines, high grade paper is included within commercial solid waste category.

D. Institutional Solid Waste. Solid waste originating from educational, health care, correctional and other such facilities.

E. Managing Activity. An administrative element assigned to manage the recycling program (including personnel, funds and equipment) for the purposes of carrying out the objectives of this Directive.

F. Office Waste. Solid wastes generated in the buildings, room, or series of rooms in which the affairs of a business, professional person, branch of government, etc., are carried on; excludes waste generated in cafeterias, snack bars, or other food preparation and sales activities.

G. Recycling. The process by which recovered materials are transformed into new/usable products.

H. Resource Recovery. The process of obtaining materials or energy from solid waste.

I. Residential Solid Waste. Includes garbage, rubbish, trash and other solid waste resulting from the normal activities of households.

J. Resource Recovery Facility. Any physical plant that processes residential, commercial or institutional solid waste, biologically, chemically or physically, and recovers useful products, such as shredded fuel, combustible oil or gas, steam, metal, glass, etc., for resale or reuse.

K. Recoverable Resources. Materials that have useful physical or chemical properties after serving their original purpose and can be reused or recycled for the same or other purposes.

L. Sludge. The accumulated semiliquid suspension of settled solids deposited from waste waters or other fluids in tanks or basins.

M. Solid Waste. Includes garbage, refuse, and other discarded solid materials, including solid waste materials, resulting from residential, institutional, industrial, commercial, and agricultural operations, and from community activities. Mining and agricultural solid wastes, hazardous wastes, sludges construction and demolition wastes, and infectious wastes are not included in this category.

N. Source Separation. The separation of recyclable materials at their point of generation by the generator.

SOURCE SEPARATION FOR MATS RECOVERY GUIDELINES, THE URBAN SERVICES GROUP, Inc.

IV. SOURCE SEPARATION TECHNOLOGY/TECHNIQUES

Source separation is a recovery "technique" more often than it is a technology, since it primarily involves convincing individuals to decide what is waste and what is salvageable (worth saving). In our "throw-away" society, this is often very difficult. Sometimes, even the most optimal techniques require that efforts be made in recovery programs involving the use of additional space, material, and time. Nonetheless, successful source separation techniques have been employed with large groups of households, commercial establishments, and office complexes.

Source separation programs tend to be quite site-specific, with variations reflecting the particular area, neighborhood, part of the country, or implementing organization characteristics. There are almost as many variations in technique as there are programs. For this reason, it is necessary to "custom-design" a system for a particular set of circumstances. At the same time, it is advisable to base any system on the experiences of others.

This chapter provides brief descriptions of the characteristics and peculiarities of the more common source separation technologies/techniques employed today for recovery of high-grade office paper, computer tab cards and printouts, old corrugated containers, newsprint, and other mixed household materials. These materials are either required or recommended in the Guideline. The ensuing discussion provides an overview of source separation technology/techniques as they presently exist, primarily in non-military circumstances. Background information on the categories and uses of waste-paper, including price history, is provided in Appendix F. Specifications and contaminant limitations for different grades of paper are included as

Appendix G. Appendix H provides examples of implementation tools used in the various types of source separation systems described in this chapter. They are provided as working examples from successful programs.

A. High-Grade Office Papers

The wastes in office areas generally contain very high quantities of mixed paper grades and types. Depending on the source, this quantity may be as high as 80-90% of the waste generated in an office area. Since this paper is mixed, its recovery is often discouraged. However, when paper is separated at the source from contaminants such as beverage containers, luncheon garbage, paper binders, plastics, etc., significant and marketable quantities can be recovered.

Three different types of office source separation systems have been used for recovering high-grade office papers. These include: the desk-top system, which provides for a small desk-top container for each desk location; the dual basket system, which provides the waste generator with two wastebasket choices; and the central container system, in which many office workers use a common, centrally located container.

In the desk-top system, each office worker places the acceptable papers in the provided container (Figure IV-1). When the container is full, the worker carries the accumulation to another, larger container which is readily accessible to 10-15 other office workers. This is done while the workers are on their way to other office areas, e.g., water fountain, rest room, mailroom, etc. This container should be a specially marked, small corrugated box, about the size of boxes in which copy paper is shipped (Figure IV-2). The contents of these containers are then collected by maintenance personnel on a regular basis (Figure IV-3). The collected material is stored in larger containers, separate from regular refuse (Figure IV-4). There, it will be picked up for further processing prior to sale.

Figure IV-1: Office Worker Placing High-Grade Paper in Vertical Desk-Top Container

Figure IV-2: Office Worker Placing Accumulated Paper in Specially Marked Corrugated Box

Figure IV-3: Maintenance Man Collecting Office-Separated, High-Grade Paper

Figure IV-4: Collection Box Being Emptied in "Gaylord" Storage Container Prior to Pickup by Purchaser

With the dual basket system, the office worker has two wastebaskets. Often, the wastebaskets are located adjacent to each other; this, however, increases the possibility of contamination because of inaccurate separation or collection by the maintenance staff. After collection from the office area, the paper generally follows the same flow as in the desk-top system.

In the central container system, each office worker must devise his or her own method of short-term storage for separated papers. Some workers will use an extra in/out basket, a spare drawer, or a file divider. When the storage container is full, the worker takes the material to the central container. Often, the container may be remote from the normal walking and traffic patterns of office workers. Placement of these containers near water fountains, rest rooms, or stairways should make it more convenient for office workers to drop off separated material. However, since these central containers are frequently large and open, objectionable materials such as newspapers and magazines are often placed in them.

There can be significant variability in the economics of different office source separations systems. According to a recent study performed for the EPA,* major independent variables include the method of separation, type of paper separated, type of building and configuration of offices, building occupancy status (own/lease), and custodial status (employee versus contract). It has been concluded, nonetheless, that office source separation can be practical and economical. In certain programs, overall solid waste management costs have been reduced by up to 59 percent, with the average reduction

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* U.S. EPA, Optimization of Office Paper Recovery Systems, May 1976.

being 12%. Generally, it was found that an office worker can recover approximately one-half pound of high-grade paper per working day.

Table IV-1 contains a summary of the cost analyses performed in the EPA study, showing an overall decrease in costs on a net basis. However, in almost all cases, the costs associated with collecting additional material were offset by savings attributable to both disposal savings and revenues. Of the methods investigated, the desk-top method absorbed more collection costs and reduced more overall solid waste management costs than did the other methods. In fact, the desk-top approach, on an average, reduced solid waste management costs 23%; the central container method averaged 12%; and the dual basket, 2-7%. Another benefit of the desk-top method is that it diverts an average of 38% of the total waste, which is slightly less than the central container method (40%). The dual basket approach disposed of 18% of the total waste generated.

Besides the overall effect of the office source separation program on solid waste management for an office building, other "start-up" factors are involved. These factors have costs, and are also key to a successful program planning and implementation. For instance, office workers must become familiar with program procedures and with exactly what constitutes recoverable material. Often, separators will have a small instruction decal placed on a disposal container. Posters are also a very effective instruction technique (Figure IV-5). Additionally, a combination of memos, posters, signs, meetings, ads in newsletters, slide presentations, a list of "do's and don't's", and positive motivation should be provided.

Overall, start-up costs have been estimated at about 5¢ per employee for initial administration, labor, and equipment.* The cost for materials handling

* This does not include any costs for desk-top separators or central corrugated boxes which can be provided by the contractor who purchases the recovered paper.

Table IV-1

Impact of Source Separation on Overall
Office Building Solid Waste Management Costs**
-By Source Separation Approach-

Approach/ Building No.	Solid Waste Management Cost ($/ton) Prior to Source Separation	After Source Separation	Incremental Cost Factors (% Change*) Net Effect	= Collection#	+ Disposal	+ Revenue
Desk Top						
3	92	60	-35	+12	0	-47
5	107	80	-25	+ 2	- 5	-22
10	47	43	- 8	+ 4	0	-12
Average Change	--	--	-23	+ 6	- 2	-27
Dual Basket						
7	74	67	- 9	0	0	- 9
8	412	419	+ 2	+ 6	- 2	- 2
11	75	80	+ 7	+12	0	- 5
Average Change	--	--	0	+ 6	- 1	- 5
Central Container						
1	34	23	-32	+ 1	- 7	-26
2	61	64	+ 5	+23	- 6	-12
4	53	38	-28	+46	-15	-59
6	315	294	- 7	+ 1	- 4	- 4
9	77	70	- 9	+ 5	-12	- 2
12	134	132	- 1	+ 8	0	- 9
Average Change	--	--	-12	+14	- 8	-18
Overall Average Change	--	--	-12	+10	- 4	-18

* Change as a percent of total solid waste management cost (per ton) prior to implementation of source separation.

\# "Collection" encompasses equipment and/or labor to store, collect, and/or process source separated paper.

** Categorical averages may not be conclusive due to limited number of case studies and multiple independent variables.

Source: U. S. EPA, Optimization of Office Paper Recovery Systems, May, 1976.

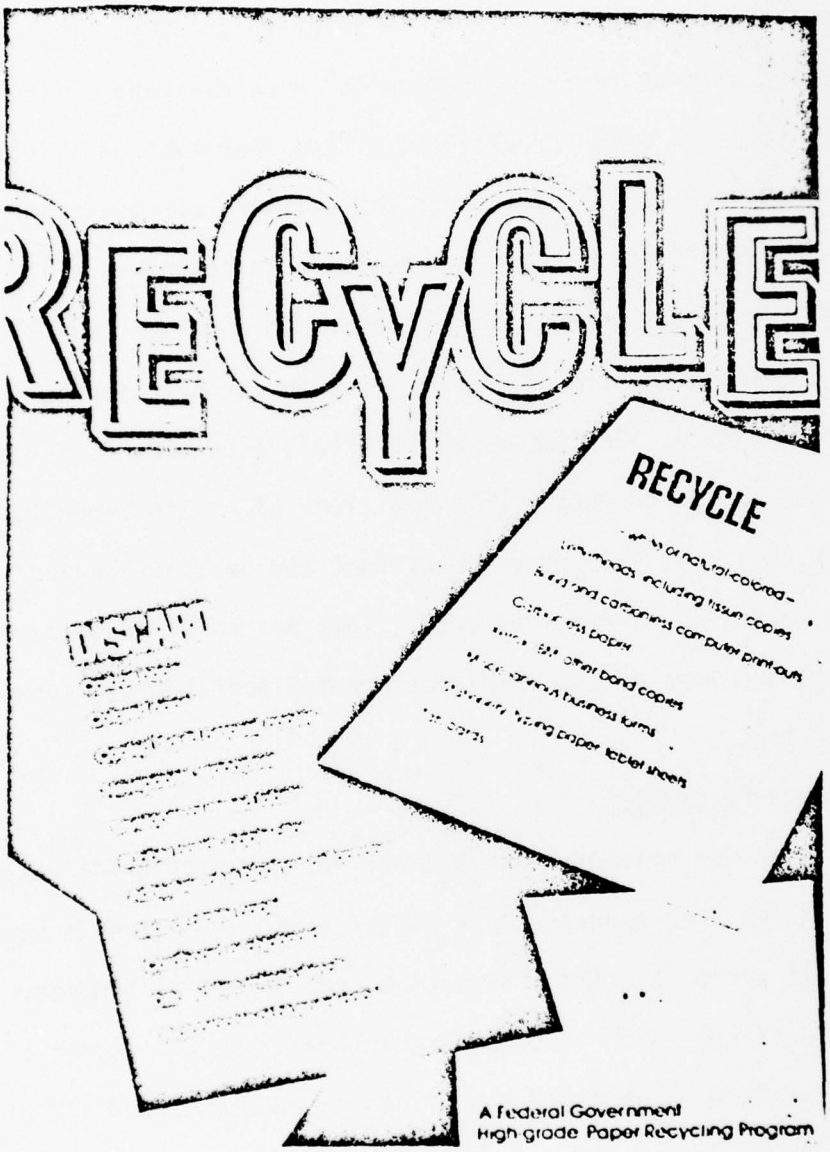


Figure IV-5: "Use It Again Sam" Office Paper Instruction Poster

equipment averages 1¢ per employee, while publicity materials average 3 to 4¢ per employee. Some 3 minutes of staff time per employee are required for effective communication and planning during the start-up phase.

Several paper-product manufacturing companies* have designed office source-separation programs that are often provided to office complexes on a full-service basis. For example, one manufacturer who delivers various types and large quantities of business forms and paper products to customers will provide desk-top holders, corrugated storage boxes, and employee education and publicity program materials as part of its contract to purchase source-separated, high-grade papers. The separated material, accumulated in loading-dock areas, is loaded on the company's delivery truck after its products have been delivered. In this way, the recovered product can be "back-hauled" to the paper mill for recycling at marginal cost. This mechanism is becoming very popular as more and more office complexes are implementing high-grade office source separation.

B. Computer Tab Cards/Printouts

Computer tab cards and printouts are another form of high-grade waste-paper. Table IV-2 shows the composition of office solid waste, which varies by building type. In a general office situation, the amount of computer tab cards and printouts generated is considerably less than the amount of high-grade paper generated. Tab cards and printouts average 5 and 11% of the waste stream, respectively, compared to 51% average for white ledger. However, certain types of offices, such as data centers, would generate much greater quantities of tab cards and printouts. The higher value of this type of paper warrants its separation.

* Kimfibers, Ltd., Neenah, Wisconsin; Shade Information Systems, Green Bay, Wisconsin; Weyerhauser Company, Tacoma, Washington.

Table IV-2

Composition of Office Solid Waste
By Building Type*

Material	Generation/Building Type (lbs/employee/day) Bank/Insurance Co. Range	Average	%	General Office Range	Average	%
Paper						
Computer Tab Cards	0.28-0.53	0.39	17	0.02-0.11	0.05	3
Computer Printout	0.60-0.74	0.70	30	T -0.17	0.11	7
White Ledger	0.67-0.74	0.70	30	0.31-0.62	0.51	33
Colored Ledger	0.05-0.16	0.12	5	0.05-0.19	0.09	6
Newspaper	T+-0.16	0.07	3	0.19-0.36	0.25	16
Corrugated	0.05-0.07	0.05	2	0.11-0.17	0.14	9
Other#	0.11-0.16	0.14	6	0.14-0.22	0.17	11
Garbage	T -0.07	0.02	1	0.05-0.12	0.09	6
Metal	0.02	0.02	1	0.02-0.05	0.03	2
Glass	T -0.02	0.02	1	T -0.06	0.03	2
Plastic	0.02-0.05	0.02	1	0.02-0.09	0.05	3
Textile	T -0.02	0.02	1	T	T	T
Wood	T -0.02	0.02	1	T	T	T
Miscellaneous	T -0.02	0.02	1	T -0.06	0.03	2
Total	---	2.31	100	---	1.55	100

* Based on representative solid waste sampling conducted at six buildings during study; does not include cafeteria waste

\+ Trace

\# Generally non-recyclable paper: carbon paper, wax coated or impregnated paper products, etc.

Source: U. S. EPA, Optimization of Office Paper Recovery Systems, May, 1976.

The separation of both computer tab cards and printouts is a very simple procedure and one that is easily practiced due to the nature of their generation. For protection, tab cards are usually stored in their original boxes. After they are no longer needed, they are usually discarded in the same box. Placement of these containers at a central location (perhaps with other office paper) is convenient for both workers and collection personnel. Computer printouts, unfortunately, are not generally containerized. However, computer paper is usually stacked in an office until it is no longer required for future reference. Centrally located containers and laundry carts commonly serve as collection containers in office areas where large volumes of computer printouts are generated.

In cases where computer printout waste is not generated in substantial quantities, it has been mixed with other high-grade paper. This, however, may downgrade the stock to mixed ledger and result in lower revenues. Centrally located receptacles are important in rooms containing printout and keypunch machines or other data-processing equipment. In such instances, it is not difficult to segregate the more valuable tab cards and printouts from the other office high-grade, as they are generated. For activities generating large quantities of computer-related wastepaper, segregation of this waste from white ledger is profitable.

C. Used Corrugated Containers

Roughly 5 million tons of used corrugated material (generally in the form of containers) are recycled each year through the wastepaper industry. This consumption represents a recycling rate of approximately 30% for this type of paper fiber.

Much of the present recycling of corrugated containers is accomplished by private solid waste collection and secondary wastepaper dealers, who have encouraged local retail, wholesale, industrial, and office establishments to separate the corrugated container material in their waste stream.

New demands and correspondingly higher prices have again created interest for corrugated source separation, especially by retail establishments. The interest represents a concern for sensible business operations management. For private solid waste collectors and paper dealers, the drive is purely economic. As long as the market conditions are favorable, their interest in this means of paper supply will continue.

Both private haulers and secondary materials dealers often provide and service containers, compactors, and balers to generators of substantial quantities of used corrugated containers. The financial arrangements for such services vary. When old corrugated containers are source-separated into a high-quality (low-contaminant) material, the installed equipment is often subsidized by the collector (provided free in a sense), or credited against expected corrugated revenues. When contaminants (e.g., beverage containers, miscellaneous non-acceptable packing medium, etc.) are not separated from the corrugated materials, the value of the material is decreased and may cause any subsidy for installed equipment to be withdrawn. Generally, retail establishments with large quantities of corrugated packaging install their own baling or compactor-transfer equipment and receive revenue for the tonnage from local wastepaper dealers. However, for smaller establishments which cannot afford to purchase such equipment, trash and separated corrugated often may be collected for a minimal fee by a local solid waste collector. The collector, in turn, receives the revenue from the corrugated material as

payment for the services provided to his customers. Apart from this, small retail establishments may use their own delivery vehicles to transport separated corrugated material to a local wastepaper dealer. This can be advantageous for both the small and large retailer, given that the equipment to perform the service is available.

The collection methods utilized also vary significantly, depending on the size and type of retail establishment being serviced. Some examples have already been discussed. In the case of private haulers, it is difficult to obtain "actual" collection costs. Substantial quantities of corrugated containers can be collected from retail establishments of various types and sizes.

There are four basic methods of source separating old corrugated containers. The first involves the hand separation of containers by personnel during unpacking and loose storage. This method is employed where the boxes may be re-used for future packing; for example, in a liquor store. The second method also involves hand separation, but places the separated material in specially designated compactors for subsequent collection by either a wastepaper dealer or collector. Establishments with high generation rates often do this. The third method involves no separation from other waste generated. Often, private collectors will take loads of high corrugated content (perhaps as much as 50-60%), handpick the clean corrugated from other waste, bale the corrugated for sale, and dispose of what remains. This practice increased dramatically during 1974-75, when the price of corrugated skyrocketed to close to $100 per ton. When the value of corrugated falls, all the material can alternatively be disposed of without any handling recovery. The fourth method is used at very high generation

points. It, too, involves hand separation, but bales the material on-site (Figure IV-6). Personnel must be trained as to the proper operation of a baler. Bales can be made in different sizes, varying in weight from 200 to 1,000 pounds. In these cases, there must be storage space for the bales as well as materials handling equipment, such as a fork lift or hand truck for placement in storage and subsequent loading onto a truck or railroad boxcar.

A corrugated separation system also requires appropriate equipment and training for loading dock, receiving, or stock personnel. Often, the waste collector or secondary materials dealer who has the contract to haul and recover the material will provide initial training and monitoring in order to ensure the quality of separated corrugated.

D. Newsprint

Old newspapers constitute a considerable bulk of total municipal solid waste. In urban areas, newspapers can represent 10-20% of municipal solid waste by weight. The exact percentage of newspapers tends to vary according to whether the specific area is in the high- or low-income bracket, as well as the size and number of newspapers distributed in the area.

If newsprint is properly separated from other solid wastes, the result is a valuable resource. Much of the value, however, depends on the cleanliness of the newspaper, and thus separation and collection techniques are of utmost importance in the newspaper recycling process. In addition to its inherent value, removing newspaper from the solid waste stream can greatly reduce the amount of waste landfilled and, therefore, extend the landfill's life.

Markets for newsprint are generally accessible. Collected newspapers can be sold to secondary wastepaper dealers, the traditional local market. They can also be sold to industrial users if quantities are large enough.

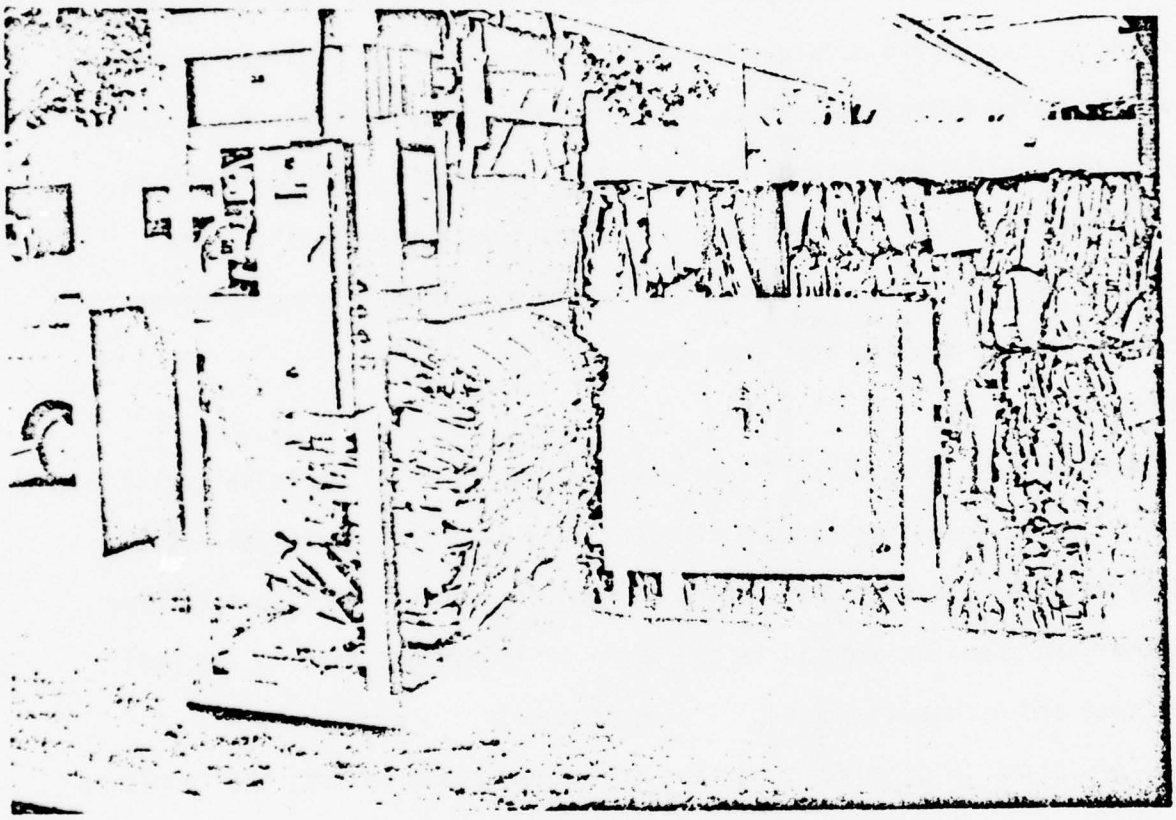


Figure IV-6: Commercial baler for old corrugated containers in use at retail establishment with a very high generation rate. Storage of bales is shown in background.

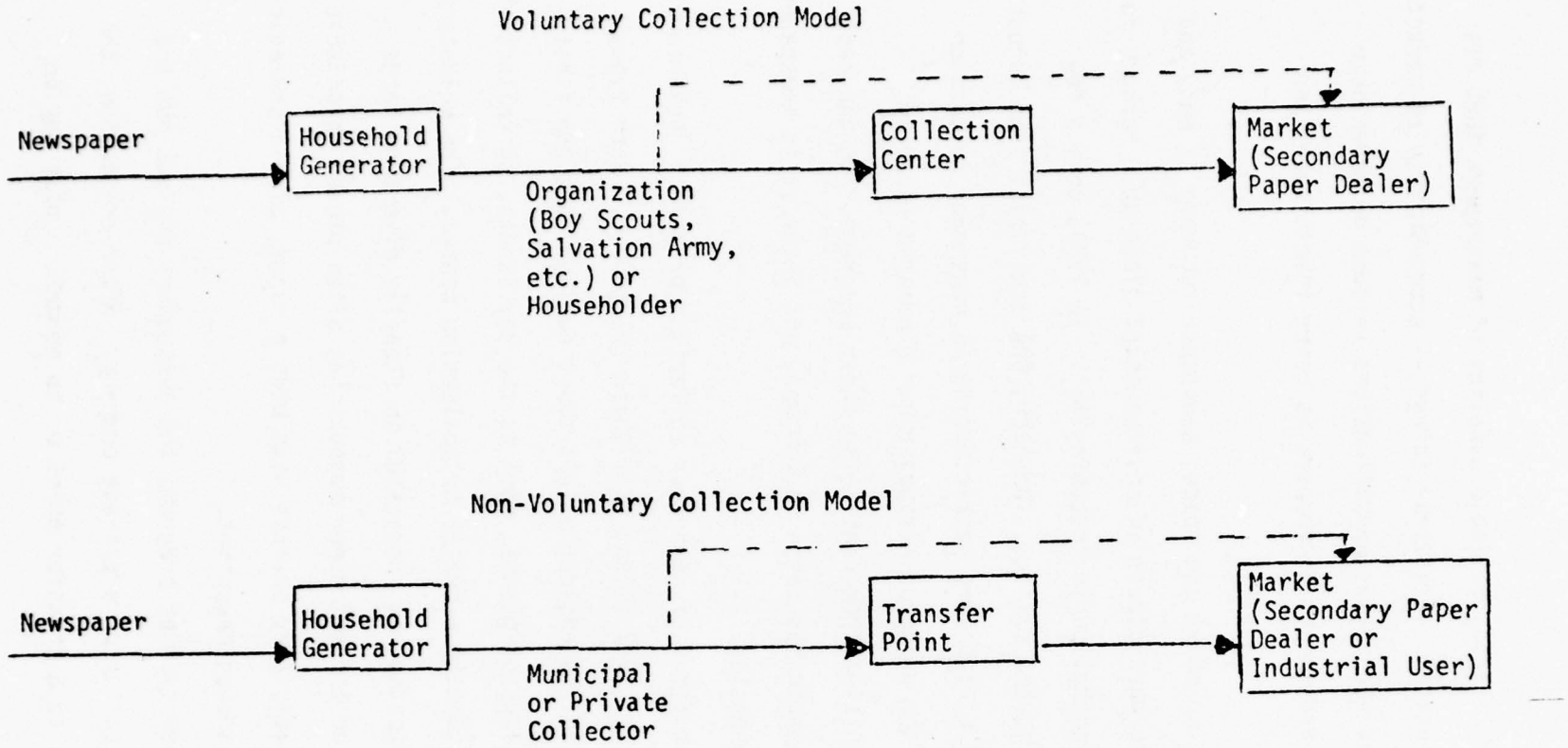
Most newsprint users want large, reliable supplies of newspapers that fit form and other specifications. All these things -- accessibility of markets, wastepaper market value, and dealer specifications -- must be taken into account when source separation of newspapers is being investigated and planned.

In addition to saving money and space, newspaper recovery is easy and gives people a chance to participate in environmental clean-up. Perhaps for these reasons, source separation is "catching on". In 1970, only a few newspaper collection programs existed. However, EPA statistics from August 1974 show that over 120 cities were participating in newspaper collection programs. Since then, the value of newspaper has plummeted severely, discouraging many communities from continuing their programs. In the past year, the value of newspaper has begun to rebound, and interest in newspaper separation is again increasing.

There are two basic types of newspaper collection programs: voluntary and non-voluntary. Figure IV-7 illustrates these two models. Both types require separation by the householder or apartment dweller, but the first relies on a voluntary group or groups, such as the Boy Scouts, to collect the newspapers and deliver them to a dealer or collection center. The voluntary collection method is often not as successful in steadily diverting large amounts of newspaper, and the volunteer support has often proved unreliable. Historically, however, voluntary sources have been a major, albeit sporadic, source of household-separated newsprint.

In the non-voluntary type of program, the newspapers are put out and collected by the municipality or a private company. After collection, the newspapers can be taken to a transfer point or to market. Costs may be

Figure IV-7: *Two Models of Source Separation*



Source: National Center for Resource Recovery, Inc.

higher with the non-voluntary collection, or at least more obvious, since in the voluntary program the volunteer group (or groups) usually absorbs the costs. Still, the second method offers dependability, and thus a steady diversion of a large bulk from the solid waste disposal stream. Properly done, up to 75% of the potentially recoverable newspaper can be diverted.

Non-voluntary newspaper collection services usually follow one of two forms: collection by separate vehicles, or collection during the regular trash run by using additional racks on the trucks. Usually, municipalities will utilize already available equipment and labor forces when they initiate a newspaper collection program. If the cost is too great for the municipality, they may seek out a private contractor. For separate collection, packer trucks are preferable to open-bed trucks, since they require less physical exertion and do not call for an additional crew member (Figures IV-8 and -9). Either the packer or the open-bed truck can cover 3-5 routes in an 8-hour day.

With the rack approach (Figure IV-10), the racks can fit on the underside of the packer, although they will not fit on all types of vehicles. Since these racks may become filled on the regular refuse run, bigger boxes should be placed along the run so that the racks can be unloaded without leaving the route. The racks cost anywhere from $100-$250, and hold from 1/2 - 1-1/2 cubic yards.

The choice between separate collection and rack collection will probably be made by looking at the volume of newspapers, program participation, and the ability of a truck to be fitted with a rack. For example, the rack approach would probably be better suited to areas which have a light volume of newspapers. Separate collection seems

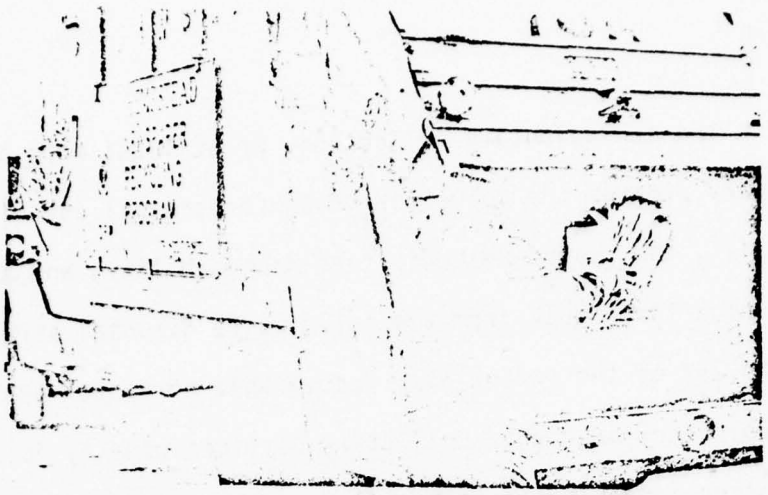


Figure IV-8: These bundles of wastepaper are being loaded into a separate collection packer truck in the town of Hempstead, New York.

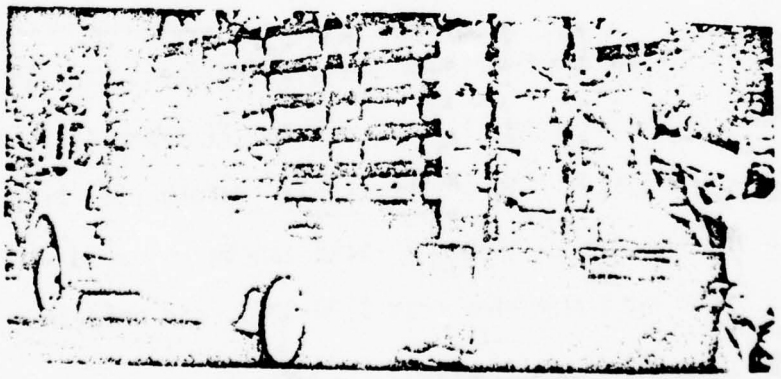


Figure IV-9: Van and open, stake-type trucks are also used for collecting source-separated newspaper.

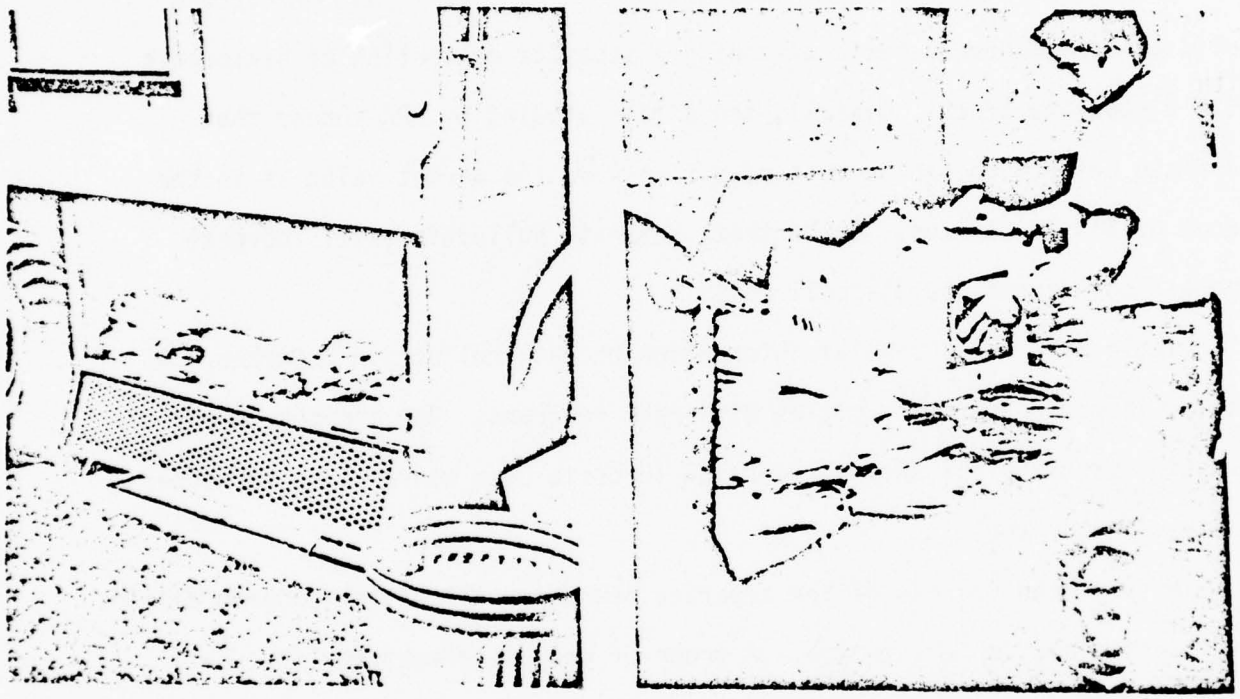


Figure IV-10: This is a special rack installed for holding bundled newspapers collected from residents in Madison, Wisconsin (left) and San Francisco, California (right).

to fit in areas where newspaper volumes are larger and program longevity is established, with participation fairly certain.

Meaningful cost estimates for the separate collection program are difficult to produce because the program involves so many elements, such as the type of regular collection, paper revenue, disposal costs, and resident participation. However, Table IV-3 shows the economic impact on overall solid waste management costs of adding a separate collection of newspapers with a separate truck. Overall, the cities studied by EPA showed that separate collection can be cost-effective when the market value is in the range of $15-20 per ton. Below that, separate collection will increase overall collection and disposal cost.

Table IV-4 shows similar information on rack collection programs. As shown, there are not many cities with rack programs. The limited number of existing programs all show a reduction in costs even at very low newspaper prices ($8 per ton).

Much of the success of the separate newspaper collection program depends on planning and implementation. A group or groups, a municipality, or a private company must take control and responsibility for the program. Often, the program will begin as a pilot and then expand into full-scale when the pilot meets with success.

In addition, participation in newspaper separation programs tends to increase with the increased duration of the program and sustained public education:

Participation	Duration of Program
15 - 20%	4 - 12 months
20 - 40%	1 - 2 years
40 - 65%	2 - 3 years

Municipal newspaper participation rates average 42% where newspaper only is collected.

Table IV-3

IMPACT OF SEPARATE COLLECTION ON OVERALL RESIDENTIAL SOLID WASTE MANAGEMENT COSTS
–SEPARATE TRUCK APPROACH–*

Case Study Location	Collection and Disposal Cost Prior to Implementation of Separate Collection	Collection and Disposal Cost After Implementation of Separate Collection†			
		Low Paper Market (average $8 per ton)		High Paper Market (average $25 per ton)	
	($/Ton)	($/Ton)	(% Change)	($/Ton)	(% Change)
Dallas, Tex.	12.10	11.60	−4.1	9.30	−23.1
Fort Worth, Tex.	13.50	14.10	+4.4	11.80	−12.6
Great Neck, N. Y	36.00	38.70	+7.5	36.50	+1.4
Green Bay, Wisc.	38.70	37.70	−2.6	37.10	−4.1
Greenbelt, Md.	27.20	27.40	+0.7	26.30	−3.3
Marblehead, Mass.	23.10	25.30	+9.5	24.10	+4.3
Newton, Mass.	32.40	32.20	−0.6	31.60	−2.5
University Park, Tex.	14.70	14.90	+1.4	13.10	−10.9
Villa Park, Ill.	13.50	13.40	−0.8	12.40	−8.1
West Hartford, Conn.	26.30	26.50	+0.8	25.20	−5.7

SCS Engineers, Source separate collection of recyclable waste.
†Credit given for diverted disposal costs and revenue generated from the sale of separately collected wastepaper.

Table IV-4

IMPACT OF SEPARATE COLLECTION ON OVERALL
RESIDENTIAL SOLID WASTE MANAGEMENT COSTS
–RACK APPROACH–*

Case Study Location	Collection and Disposal Cost Prior to Implementation of Separate Collection	Collection and Disposal Cost After Implementation of Separate Collection			
		Low Paper Market (average $8 per ton)		High Paper Market (average $25 per ton)	
	($/Ton)	($/Ton)	(% Change)	($/Ton)	(% Change)
Madison, Wis.	22.30	22.00	–1.3	20.50	–8.1
New York, N.Y.†	53.50	53.40	–0.2	53.50††	–0–
Sheboygan, Wis.	32.00	31.80	–0.6	31.50	–1.6

SCS Engineers, Source separate collection of recyclable waste.
†Queens District 67 only.
††The small quantities of newspaper separately collected had an insignificant effect on overall costs.

Two kinds of ordinances have been implemented by municipalities to aid newspaper recovery: a mandatory separation ordinance and an anti-pirating or anti-scavenging ordinance. Whereas the mandatory ordinances seem to have little value, the anti-pirating ordinances seem not only to help, but to be necessary for municipalities. Neither type of ordinance should be necessary on a DA installation, however.

Still, the basic ingredient for successful newspaper collection is promotion. Unless participating householders are informed clearly, consistently and constantly, the program cannot be as effective. The public must be aware of the program, and they must be educated.

The awareness can come by publicity: through local media -- newspapers, T.V. and radio; through business and civic leaders; and through schools. But in order to be educational, the publicity must be sustained; questions must be anticipated and answers must be available. Newspaper collection programs seem to thrive on slogans or a central theme or logo which can be painted on trash cans or put onto banners or posters but which, chiefly, is "catchy" and can be easily remembered. Some communities have had successful slogan-naming contests to increase public awareness of the program in the initial stages. Before and after the program begins, municipalities have kept people informed through bumper stickers, brochures, inserts into utility bills, flyers, and door hangers. Without the necessary emphasis on public awareness programs and public education, there will probably be little or sporadic public participation; and without public participation, the program will fail to achieve adequate levels of recovery, thus rendering it uneconomical.

E. Mixed Household Materials

Besides newsprint, there are other recyclable materials present in the household waste stream. Two demonstration projects funded by EPA* were designed to economically combine the collection of glass and cans with separate newspaper collection.

The projects are based on the premise that there is both volume and value in recyclable products. Making up more than 30 per cent of the weight and 40 per cent of the volume of municipal solid waste, recyclable glass, cans and paper together represent a sizable portion of the solid waste stream. In fact, for both cities, the reduction of their total municipal solid waste is one of the primary recycling program goals. By setting up publicity and education programs that will increase public participation and obtaining concrete markets for the different material components, collection and disposal costs can be decreased.

As in all other source separation programs, the paper, glass and cans must be separated in the home for curbside pickup. Both Somerville and Marblehead collect all metal cans and flat paper. Marblehead accepts amber, green, and clear glass, while Somerville recovers only clear glass. In both cases, the glass and cans are not sorted by the householder, but are accumulated and set out for collection together in one container. Both locations use a specially designed multi-compartment truck equipped with a rear bucket loader. (Figure IV-12). The bucket-loading compartmentalized vehicles allow two recyclable fractions to be collected at the same time. (Figure IV-13).

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*Somerville, Massachusetts, a blue-collar town of 90,000; and Marblehead, Massachusetts, a white-collar community of 23,000.

Figure IV-11: Multi-material set-out of mixed papers, and glass and cans in Somerville, Massachusetts. (Note the catchy sticker that the city distributes to participants.)

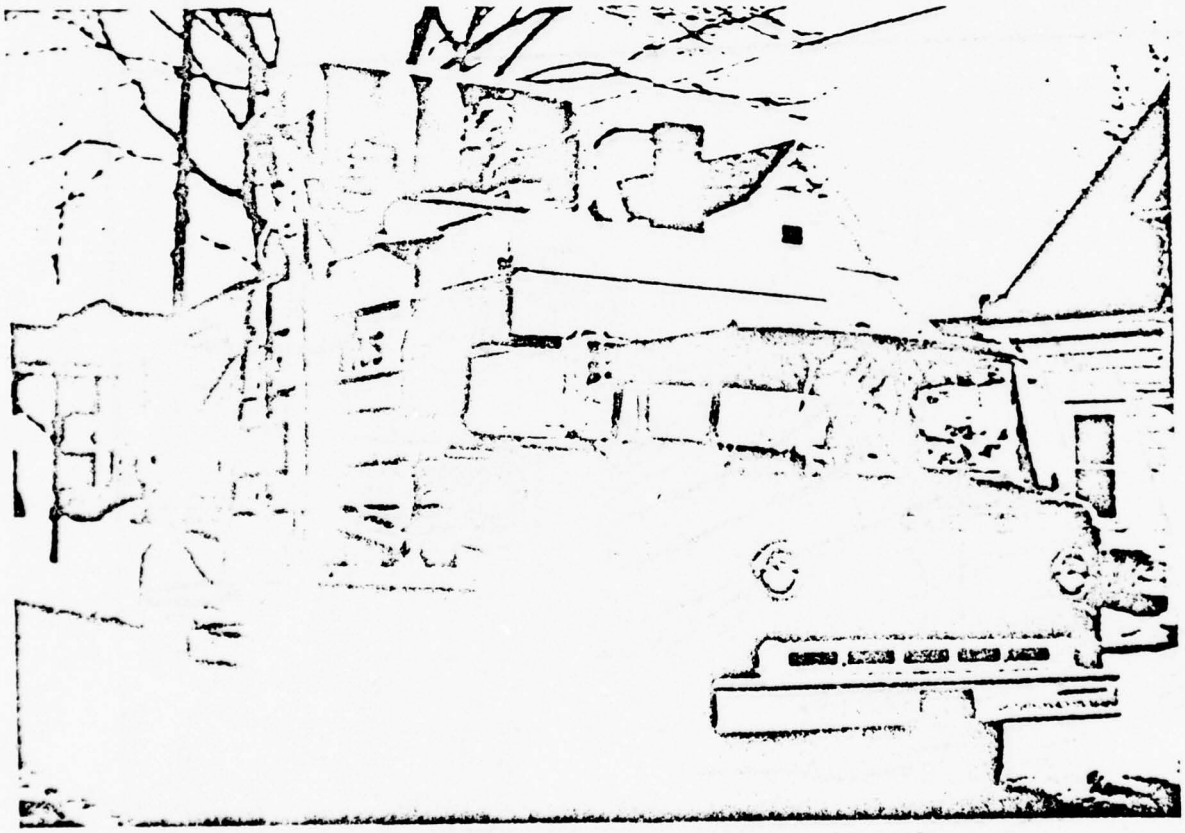


Figure IV-12: Special compartmental collection truck allows simultaneous collection of two separate household material fractions in Marblehead, Massachusetts.

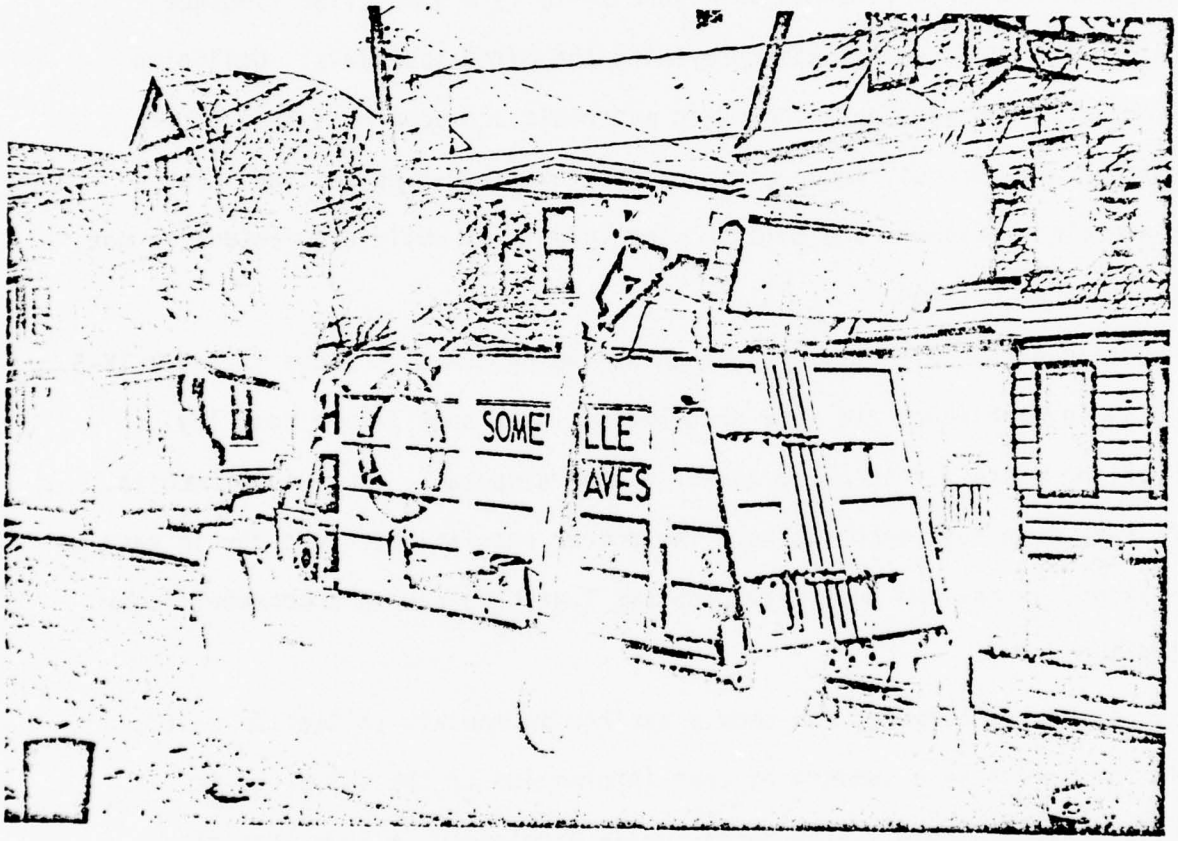


Figure IV-13: When the bucket is full, it is lifted up for unloading into the collection body. When the truck has to be unloaded, one door at a time on each side is opened for removal of collected material.

In Somerville, an available dump truck was "custom fitted" with its own compartmentalized bin (Figure IV-14).

The collected newspaper is transported to a wastepaper processor for baling prior to sale to a consuming mill. The collected glass and cans (Figure IV-15) are mixed, however, and are therefore not suitable for sale without further processing and separation. Shown in Figure IV-16 is a simplified flowsheet illustrating the process of further refining the mixed materials. Utilizing fairly simple unit operations, the mixed materials are separated into three fractions: crude ferrous, crude glass, and an aluminum-rich residue. The ferrous and glass products are sold to user industries while the residue is not presently further refined.

A summary of the effectiveness of these two programs is shown in Table IV-5. The results in Marblehead are very encouraging, with some 25 per cent (by weight) of the waste stream being diverted from disposal. Somerville results, however, have been less encouraging. The poorer results there are due in part to certain labor, union, and publicity problems that have caused a somewhat lower participation.

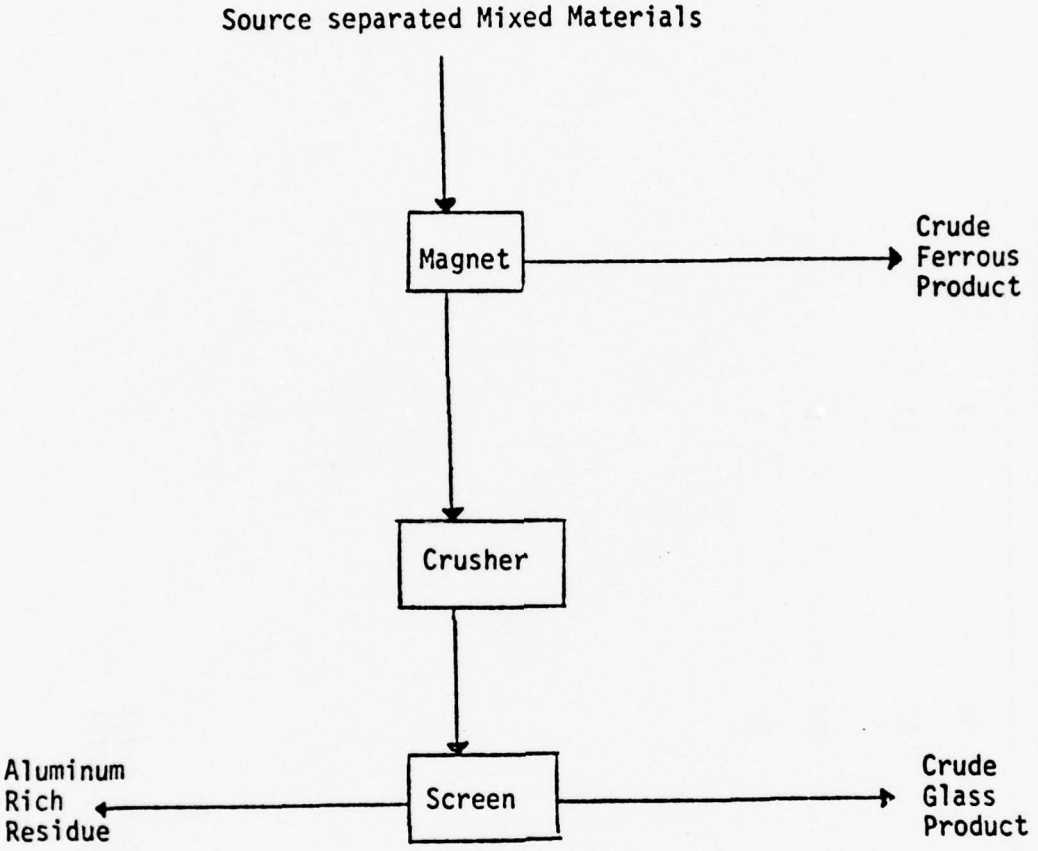
Each community however, can show a savings in monthly collection costs. Shown in Table IV-6 is a summary of cost information on the two programs. Somerville is just barely saving funds, while Marblehead, a town less than one-quarter the size, is saving almost three thousand dollars per month. For a small town, that is a big savings!

Although recycling may appear immediately beneficial to some, due to savings in costs, resources, and energy, the majority of people in any community will need to know not only <u>why</u> they recycle but <u>how</u> to recycle. Thus, in a multi-material source separation program as well as in the newspaper separation program and office separation program, the public needs to be educated.

Figure IV-14: "Custom fitted" dump truck collecting multi-materials in Somerville, Massachusetts.

Figure IV-15: The mixed materials (glass and cans) awaiting further processing and separation.

Figure IV-16: Multi-Materials: Simplified Flowsheet



Location	Materials Recovered	Tons/Month	% of Total Waste
Marblehead*	Paper	92	13
	Cans and Glass	81	12
Somerville**	Paper	122	5
	Cans and Glass	78	3

*Average figures for 8-month period. (1/76-8/76)
**Average figures for 9-month period. (12/75-8/76)

Source: U.S. Environmental Protection Agency

Multi-Materials Source
Separation Collections.

Cost Factor	Marblehead (Jan. '75- Aug. '76) ($ per month)	Somerville (Dec. '75 - Aug. '76)
Incremental Collection Cost Increase (IC)	3,972	5,779
Revenue (R)	(3,307)	(2,758)
Disposal Savings (DS)	(3,547)	(2,855)
Net Cost (DS + R - IC)	(2,882)	(166)

Source: U.S. Environmental Protection Agency

Somerville and Marblehead make use of many of the publicity techniques suggested under the newsprint section. They utilize local media by issuing newspaper articles and having radio and T.V. programs; they develop posters and signs; they send packages and flyers to schools; and they keep up direct communication with various community groups and with individual citizens. These educational techniques are used to create an awareness of the desirability -- for example, conservation and reduction of litter -- of recycling and to instruct the public on procedures for separation within the home, procedures for placing the materials on the curbside, and collection routes and schedules.

F. Recycling Centers

Since the dawn of the ecological movement on Earth Day, 1970, literally thousands of recycling centers have opened up around the United States. These centers originally relied primarily upon voluntary labor and donated equipment. However, the ceaseless generation of solid waste has caused the demise of many volunteer-supported recycling centers. Only the more aggressive centers have survived, in many cases due to the availability of public funding and/or labor support (Figure IV-16).

Industry has also played a key role in many recycling programs. For example, in 1975, almost 30 per cent of all of the aluminum cans produced were returned for recycling to industry collection points. The very high value of aluminum ($300 per ton or 1.5¢/lb.) has made it a worthwhile item for many volunteer groups (Boy Scouts, etc.) to collect in drives to raise funds, much in the same way newspapers are collected.

Different centers accept different materials. Normally newspaper, glass, metal containers and perhaps other materials such as tires, white goods, etc. are accepted. Occasionally, a center will require the removal of labels from the glass and metal containers. Other requirements may be: color-sorting of glass,

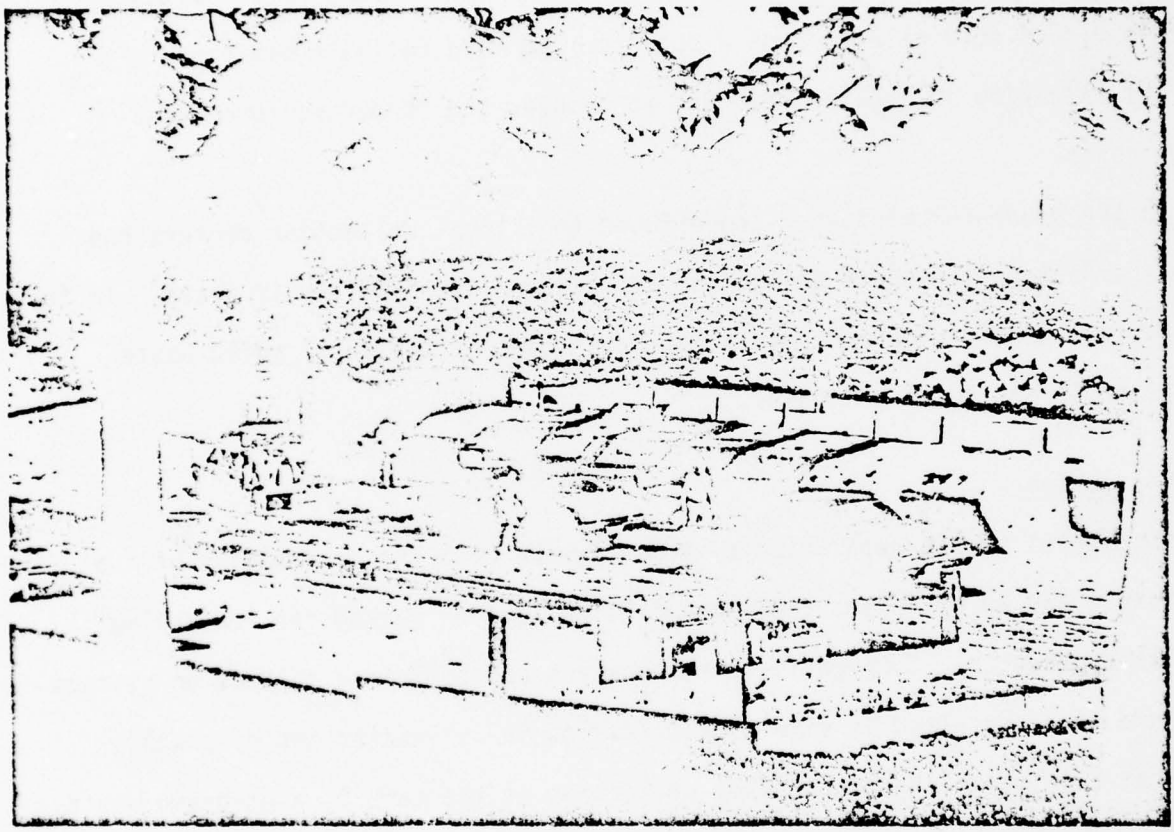


Figure IV-17: Expanded "recycling center in Wellesley, Massachusetts, operated by public works.

flattening of cans or separating aluminum cans from other metal cans.

Since costs for running a recycling center vary considerably, it is difficult, if not impossible, to give overall figures. While citizen collection centers seldom spend much money on labor or equipment, commercial and public centers usually do. Furthermore, public and commercial centers are often able to divert more materials on a steadier and more reliable basis, thereby resulting in greater revenues to counter the larger equipment and labor costs.

An EPA study (b) mentioned above found that local collection centers had little impact on the waste collection and disposal costs of their areas. In fact, the average center diverted only about 2 per cent of the total solid waste generated in the local community.

G. Conclusion

Successful source separation systems require both the cooperation of the generators and an efficient and convenient collection method for recovering separated products. Cooperative participation and efficient collection systems can, and have, resulted in significant savings in collection and disposal costs at all levels, from newspaper collection at the curb to high-grade waste paper recovery from offices. Source separation programs have a large human factor which must be accounted for. An effective collection program with the proper labor commitment, equipment, scheduling, and community feedback mechanism, is an integral part of the success of the recovery program as a whole.

V. PROPOSED SOURCE SEPARATION PROCEDURES*

A. Introduction

Based on a comprehensive survey of current source separation techniques developed and implemented to date by business and industry and an understanding of DoD and DA waste management, it has been possible to identify procedures that should be employed by the Army. The recommended procedures are compliant with Guideline provisions, and are applicable to both installations required to establish source separation programs, and those installations electing to establish voluntary programs.

The recommended procedures presented here are identified for each category of waste material identified in the Guideline - high-grade paper, corrugated containers, used newspapers and residential materials. Supplementing the text are flow diagrams identifying the sequential steps involved and the person(s) who should be responsible for their execution.

B. High-Grade Paper

1. Definition

High-grade paper includes letterhead, dry copy papers, business forms, stationery, typing paper, white tablet paper, computer printout paper cards, manuals and miscellaneous reports. Contaminants which decrease the value of these saleable products include envelopes, carbon paper, colored cover sheets, yellow tablet paper, and metal and plastic binders. A listing of all acceptable and unacceptable high-grade waste paper components should be prominently displayed on desk-top holders and bulk receptacles for convenient reference by office workers.

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*The format of this Chapter varies somewhat from the rest of the report, because of the numerous procedures set forth for future referencing purposes.

2. Source Separation and Collection

a. Desk-top separation by the office worker is considered the most effective means of source separation (see Figure V-1). Devices that can be used for this purpose are either vertical paper holders or a specially marked in-box. The two wastebasket method is considered acceptable; however, it does not provide the same degree of protection against contamination as the desk-top method.

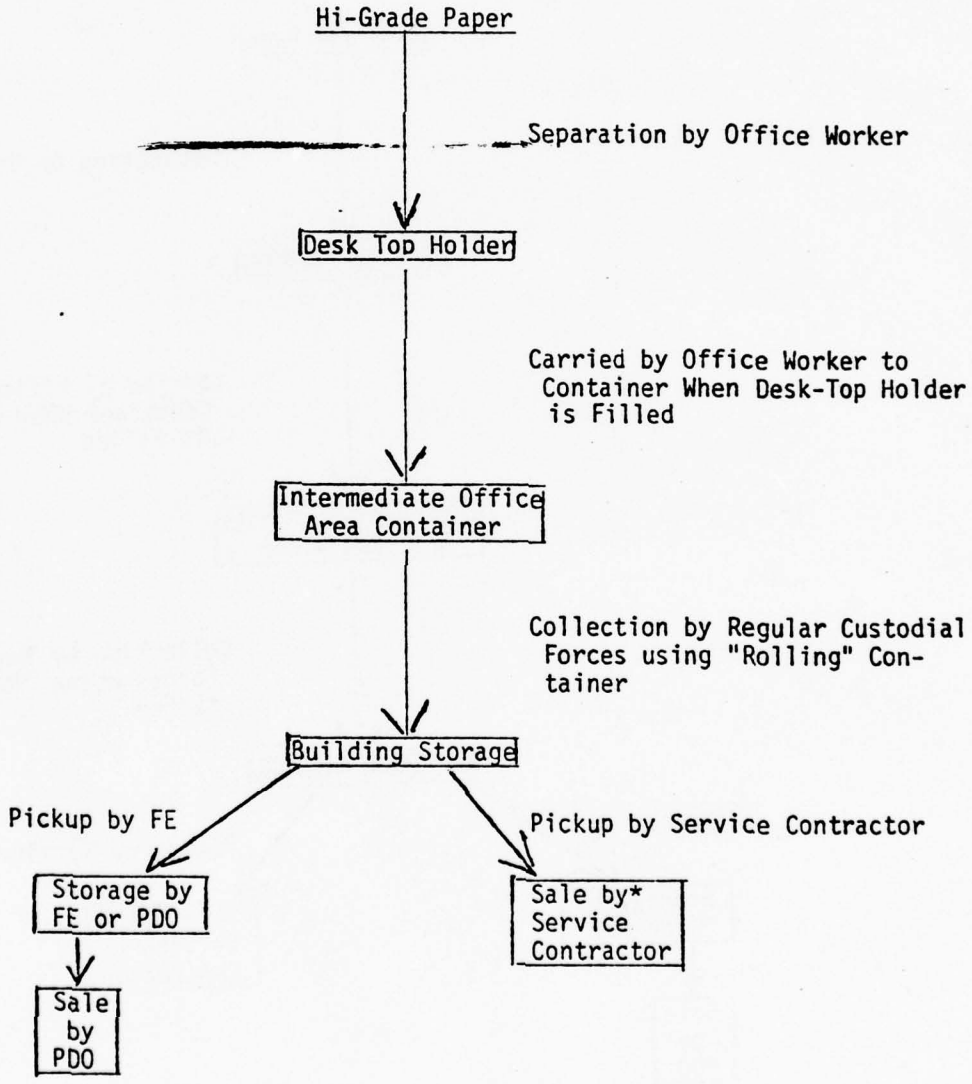
b. The first step in the collection procedure would be taken by the waste generator, who places desk-top accumulations in a conveniently placed container in the office area.

c. Collection of wastepaper accumulations from offices should be integrated into their scheduled cleaning by the regular custodial force. Segregated materials should be collected separately, but not as frequently as regular office refuse.

d. Collection and interim storage receptacles used by the custodial force could be either large corrugated boxes, cardboard barrels, or canvas laundry carts. Bulk waste materials collected would be stored within the generating facility for pickup on a predetermined schedule.

Figure V-1

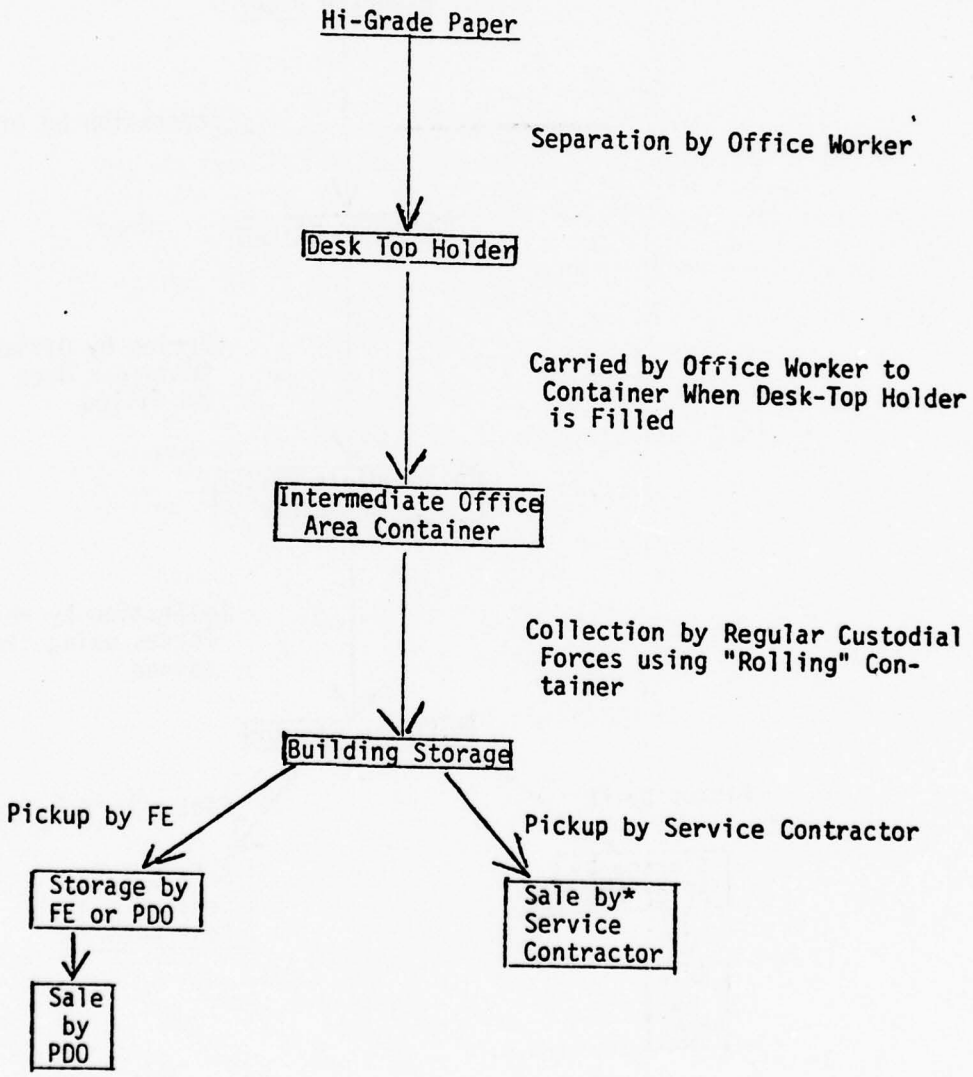
Installation Office Waste Separation



*When pickup service is provided by contract

Figure V-1

Installation Office Waste Separation



*When pickup service is provided by contract

e. Consideration should be given to having all or parts of the supply and equipment support needed for the above activities provided under a full service contract. A limited number of contractors have the capability of planning and implementing high-grade paper source separation programs. Their service often includes providing receptacles, signs or posters, other necessary supplies, and conducting an information and education program for office workers.

f. Where significant quantities of waste computer cards and paper are generated, separate accumulation and collection of these materials are highly desirable (see Figure V-2).

g. Computer cards should be accumulated in regular card boxes and printouts collected in separate cartons. Large quantities could be paletized at the time of collection for ease of pickup.

3. Pickup and Storage

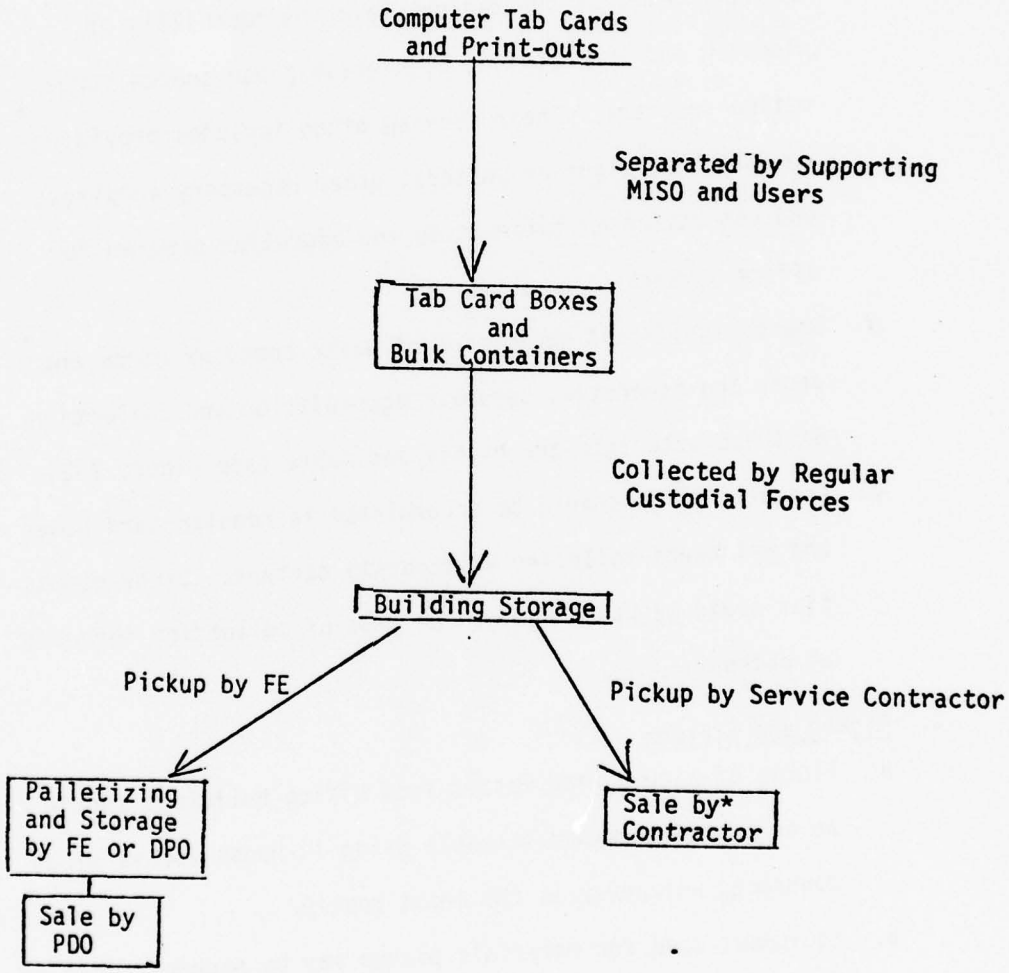
a. Pickup of accumulated wastes from office buildings should be on a predetermined schedule using in-house forces or by contract, whichever is the least costly.

b. Equipment used for materials pickup may be packer-trucks or standard cargo vehicles, provided they are not a source of contamination and afford protection in the event of inclement weather.

c. Storage of wastepaper awaiting sale must be in facilities of adequate size with essential fire protection. High-grade paper

Figure V-2

Installation Computer Paper Separation



*When pickup service is provided by contract

may be stored loose in boxes or containers, or baled. The method employed should be based on potential buyer's desires identified during the market survey. Computer cards should be stored in box-quantities. Computer printouts need not be baled if neatly stacked in corrugated boxes.

C. Corrugated Containers

1. Definition

Corrugated boxes are composed of an inner fluting and one or two outer liners of paper material. Saleable boxes exclude those having wax or plastic coatings. Further, they should not have been contaminated by leaking oil, chemicals or blood, e.g., meat containers.

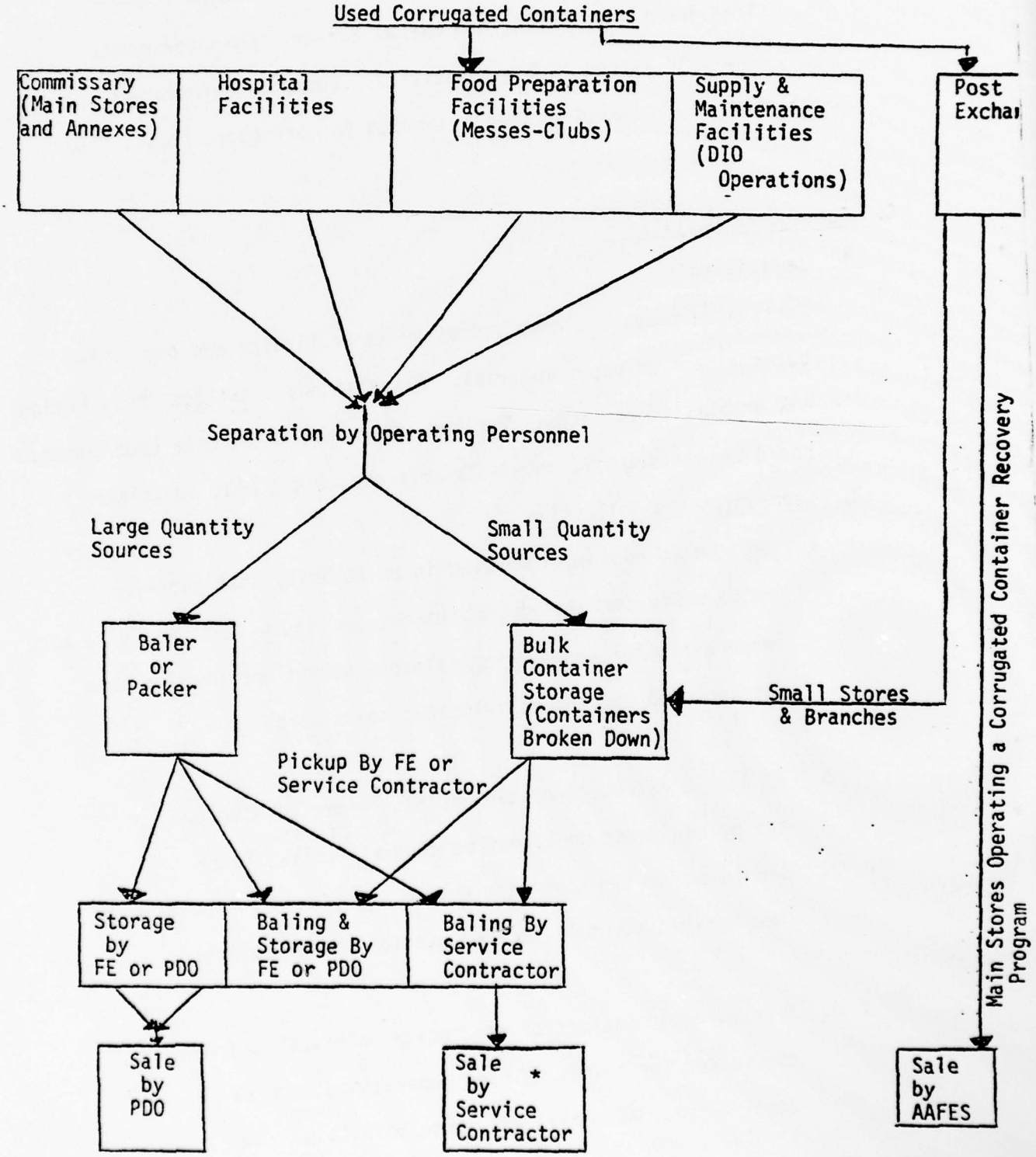
2. Separation and Collection

a. Designated employees working in an activity that generates waste corrugated containers (see Figure V-3) should be made responsible for segregating saleable wastes and placing them in specified conveniently-located containers.

b. At low to medium generation points, where packing or baling equipment would not be cost effective, boxes should be broken down before they are placed in containers (weather-resistant if located outside the building).

c. Transportable packers or stationary balers should be considered for points of high generation, such as commissaries, messhalls and large hospitals. The

Figure V-3: Installation Corrugated Container Separation



*When pickup service is provided by contract

choice of equipment should be based on the amount of space available and on prospective buyers' preferences.

3. Pickup and Storage

   a. Pickup of corrugated materials may be by packer-trucks or standard cargo vehicles. Because of the relatively few collection points on an installation, in-house crews should be able to perform this task. However, it could be accomplished by a contractor having the responsibility for pickup of other paper wastes.

   b. For ease of handling and to reduce bulk, wastes may be baled prior to being placed in storage. If this procedure is used, the number of baling facilities should be kept to a minimum by sharing the use of machines located at points of high waste generation, or by establishing a central baling facility. In many instances packers or compactor containers are preferable to balers, depending on the desires of the buyer.

   c. Storage facilities should be of adequate size, have the necessary fire protection, and permit the use of materials handling equipment. Ideally, central baling equipment for an installation should be integrated with storage facilities. An acceptable means of storage can be the packers themselves, when arrangements can be made for frequent pickup by the buyer of such materials.

D. Used Newspapers

1. Definition

Newspapers are the variety of documents composed entirely of newsprint. This includes municipal telephone directories and similar documents when covers are removed. Excluded are the majority of magazines which are printed on smooth and glossy papers.

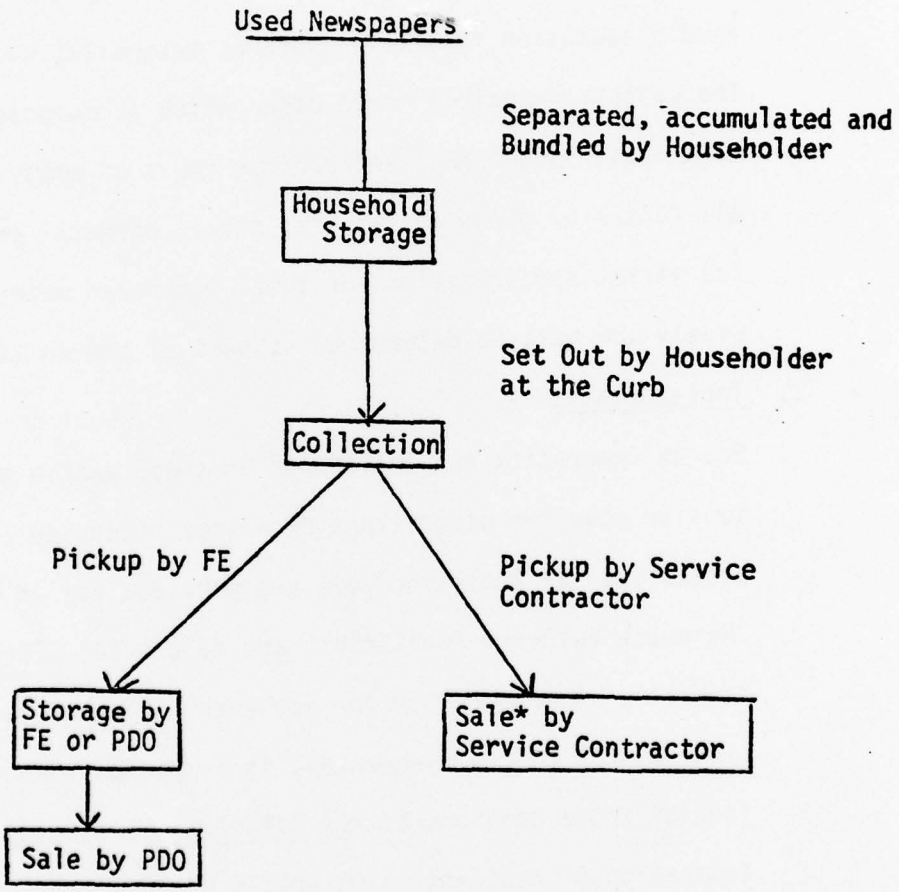
2. Separation and Collection

a. Occupants of family and bachelor housing should accumulate newsprint, and at prescribed intervals, bundle it at the curb for pickup (see Figure V-4). Bundles may be tied with string or placed in grocery bags. The latter technique facilitates pickup and handling, and protects the paper from contamination. The method of bundling should be elected based on the desires of the buyer.

b. Because family housing refuse is normally collected under contract, newspaper collection should be accomplished by modifying the contract to enable both operations to be performed. Newspaper collection should be on a predetermined schedule that can be coordinated with regular refuse collection. A collection frequency of no more than twice per month is recommended.

c. Where the collection contractor is willing to accept the newspaper through recycling, a suitable reduction in the cost charged for collecting installation refuse should be negotiated. At installations where such an arrangement is not possible, collected newspapers should be picked up by the FE, and stored in large bins or containers pending sale. Baling bundled newspapers is difficult and

Figure V-4: Installation Newspaper Separation



*When pickup service is provided by contract. Cost of regular refuse collection would be reduced by an amount based on the market value of the paper.

time consuming and should not be done unless desired by potential buyers.

E. Residential Materials

1. Definition

The major sources of these wastes are family and bachelor housing, food preparation facilities such as messhalls, clubs, and hospitals. The materials include mixed paper which is composed of newspapers, magazines, "junk" mail and various types of empty foodstuff boxes; all colors of glass containers; steel, bi-metal and aluminum cans. The market specification for these recovered materials often vary widely and must be determined as part of the initial market survey.

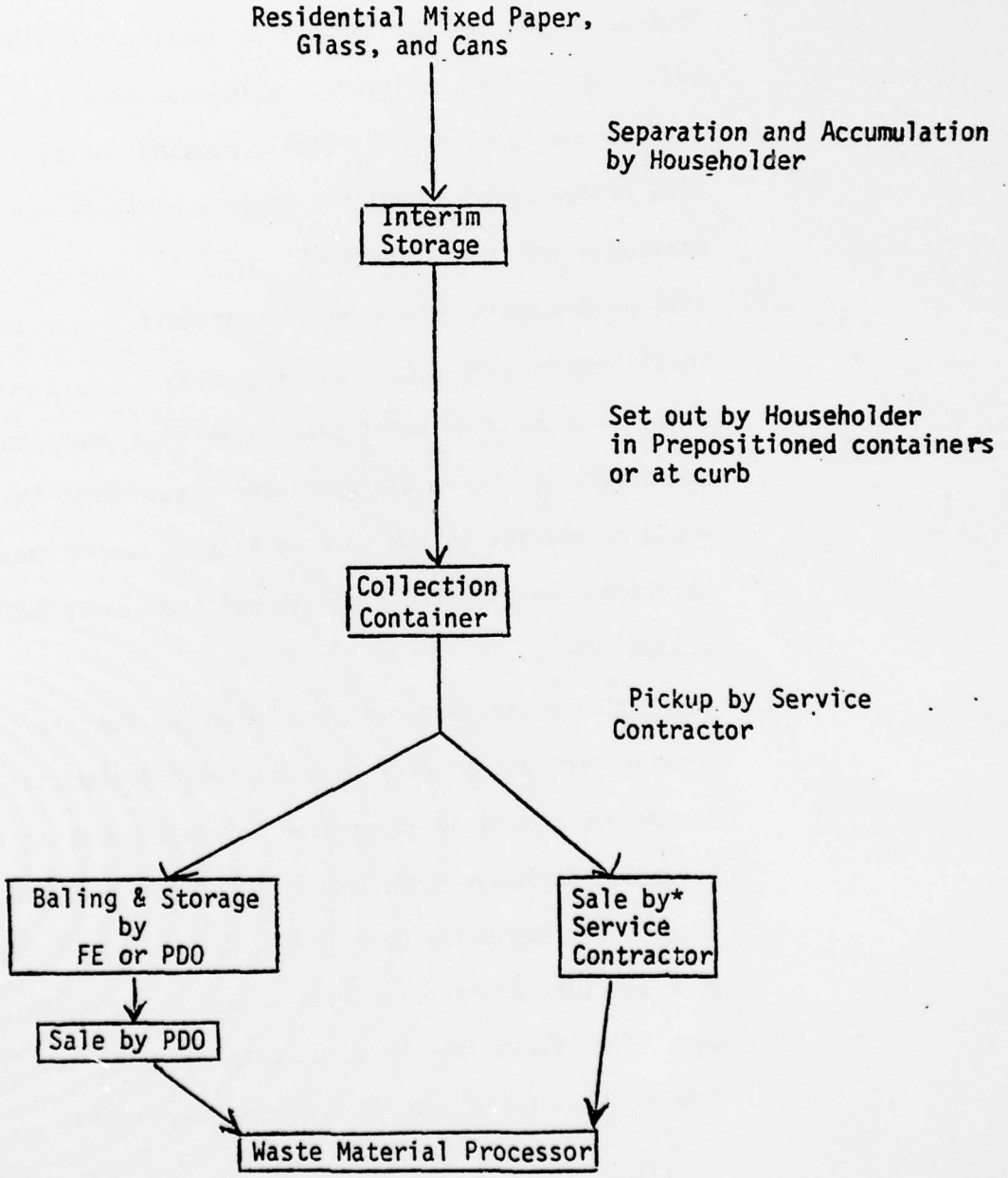
2. Implementation

Source separation and collection of these wastes are more labor intensive than the other types of wastes discussed above. Further, provisions for their recovery are provided for in 40 CFR 245, "Resource Recovery Facilities" and 40 CFR 244, "Beverage Containers". A methodology for implementing these is currently under study within DoD; consequently, it is recommended that implementation of those portions of the Guideline pertaining to the source separation of residential materials be deferred. Applicable procedures are included here, should the Army decide to proceed with the recovery of these materials at some future date.

3. Segregation and Collection. (Figures V-5)

a. Residents should separate clean mixed paper and metal and glass food/beverage containers and place them in a storage receptacle. The flattening of metal cans would be by individual choice. In installations having less than 2500 family housing units,

Figure V-5: Installation Residential Materials Separation (Housing)



* Total contract pickup service is the preferred procedure. Cost of regular refuse collection would be reduced by an amount based on the market value of the materials.

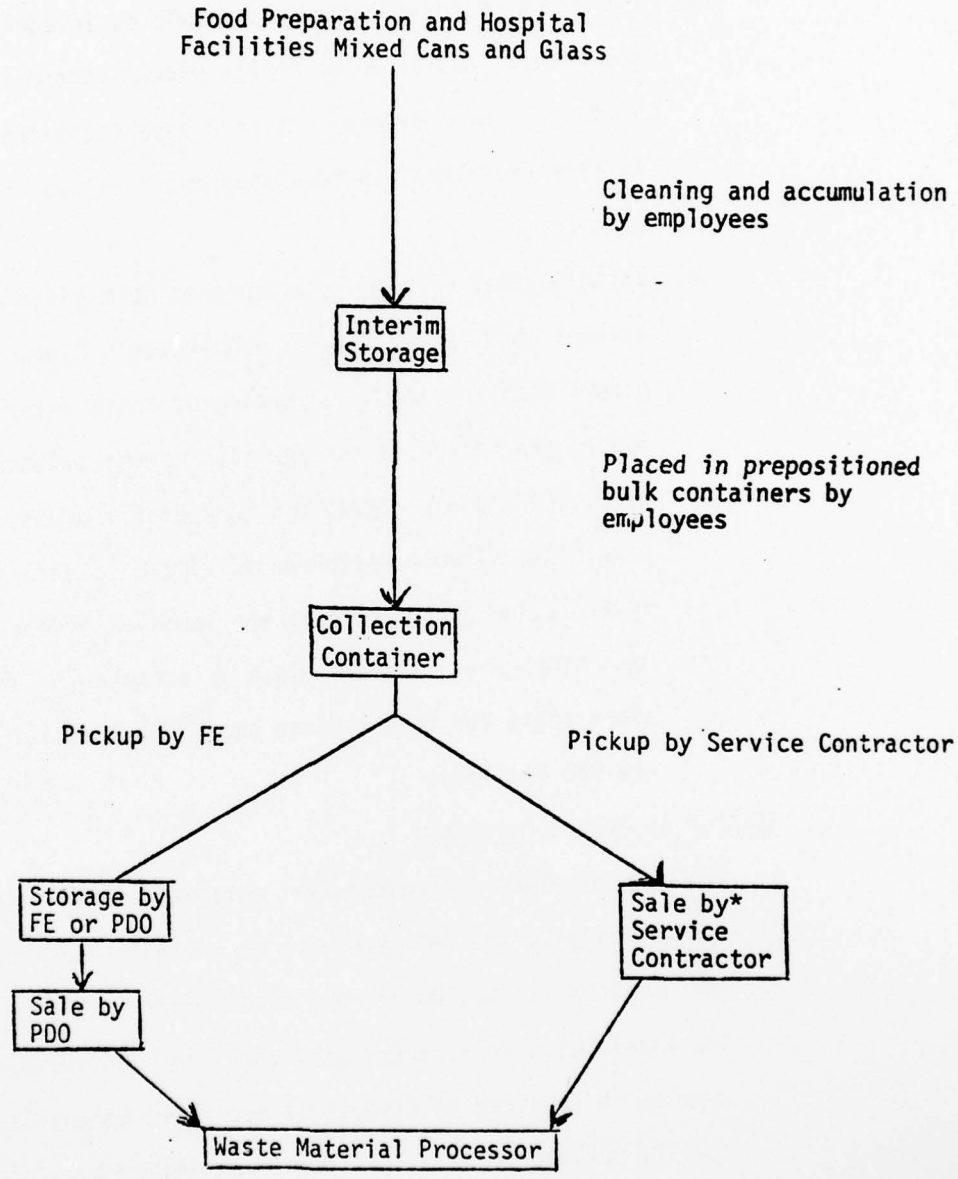
accumulations should be deposited in conveniently located and clearly identified bulk containers. Separate containers should be provided for mixed paper and mixed glass and cans. These containers should be clustered, and set out for use by apartment buildings and up to fifteen individual residences on larger installations (2500 or more family housing units). Curbside pickup using a modified cargo vehicle is considered desirable and cost effective.

b. Similar procedures could be used by food preparation facilities (Figure V-6). Kitchen workers would rinse metal and glass food containers and place them in a separate receptacle in the food preparation area. This in turn would be emptied by the workers into a larger receptacle positioned outside the facility which would be emptied by pickup crews.

c. Collection containers can also be placed near soft drink vending machines or at a location near consumption. Purchasers should be encouraged to place empty cans in specially marked receptacles. Periodically, custodial crews would empty the containers, and transport the contents to a suitable storage location. Such a procedure could work effectively for military school facilities, field training sites and most of the modern barracks.

*The format of this Chapter varies somewhat from the rest of the report, because of the numerous procedures set forth for future referencing purposes.

Figure V-6: Installation Residential Materials Separation
(Food Preparation and Hospital Facilities)



* Total contract pickup service is the preferred procedure. Cost of regular refuse collection would be reduced by an amount based on market value of the materials.

4. Pickup and Storage

a. Pickup of collected materials should be integrated into the regular installation refuse pickup schedule. Conventional cargo trucks that have been compartmentalized to keep the materials separated could be used for this purpose.

b. Installations wishing to support on-post civic organizations such as the Scouts, PTA, Women's Club, could permit them to pick up a portion of these materials for independent disposal through sale on the private market. By limiting their operations to specific areas, and requiring reliable performance, little interference with installation pickup efforts should be experienced.

c. Open storage of cans and glass is acceptable, and sufficient space for this purpose should be available within the PDO facility.

F. Sale of Recovered Materials

1. The sale of paper and residential material wastes is the responsibility of the PDO servicing an installation.

2. The services of the PDO are not used when an installation contracts for total resource recovery services. In such instances, the contractor is required to dispose of recovered materials for recycling purposes only. This procedure should be employed when it is advantageous to the Government. Contracts for such service should provide monetary credit for the amount of material collected and sold by the contractor, based on some acceptable minimum quantity of waste generated by the installation per month and the market price

*When pickup service is provided by contract

for these materials during the generating period.

G. Financial Management

1. Proceeds from the sale of recovered materials less the amount the DPDS deducts for expenses, is to be deposited to an account established by the managing activity (normally the FE). See Interim Change 25 to AR 37-108 (DACA-CSS-FF) dated 4 June 1974.

2. Net proceeds from the sale of solid waste materials shall be used to reimburse the following expenses incurred in operating solid waste resource recovery programs:

   a. The acquisition of replacement equipment for recycling purposes. The provisions of DoD Instruction 4160.1 apply in the financing of replacement equipment.

   b. The acquisition and identification of containers and container stands for proper segregation of solid waste material.

   c. The collection of waste materials from the containers.

   d. The separating, baling, compacting, shredding, pulping, or otherwise altering the size, shape or form of the waste materials.

   e. The transfer of marketable items to the account of the PDO. Transfer of physical custody is not required; such property shall be moved only when it is most economical and effective to do so.

   f. The installation-level administration and support of the above functions by the managing activity.

*When pickup service is provided by contract

3. Elements of expense as charged to all activities by the installation-level accounting system are included, but military personnel expense may not be reimbursed from the net proceeds. Any net proceeds after expenses and replacement equipment costs have been reimbursed, may be made available by the managing activity to finance special projects for environmental improvement and energy conservation. The amount of such financing for such projects shall not exceed $50,000 per installation. Should any balance be left in the designated account, after the environmental and energy conservation projects are financed, it will be transferred to Budget Account 97-F 3860.5191, "Proceeds from the Sale of Scrap, Salvage, or Surplus Materials, Defense Supply Agency".

4. Solid waste material recycling expenses that are not offset from net proceeds are eligible for reimbursement from any net proceeds remaining in Budget Clearing Account 97-F 3860.5191, after reimbursement of all other categories of disposal expense.

H. Management

Representatives from those offices and activities on the installations that have relatively large numbers of personnel or whose activities would be noticeably affected by the source separation procedures should be part of a planning and implementation team for the source separation program. Project team members would include representatives from the Directorate of Facilities Engineering, Directorate of Industrial Operations, Directorate of Personnel Operations, Family Housing Office, Information Officer, Commissary Office, Post Exchange, and Property Disposal Office. A single program monitor should be designated as the central point of contact for performance data collection, reporting requirements, construction

adequate size with essential fire protection. High-grade paper

monitoring, contract revision initiations, and overall performance monitoring. Additionally, monitors should be designated throughout the installation to ensure that proper source separation takes place. Close coordination between the FE, PDO, Family Housing Office, Information Officer, and contractors will especially be required after the program becomes operational.

I. Public Information/Education

A public information and education program should be coordinated with the Information Officer (I)) at the installation. The IO should provide the necessary tools for effectively communicating the installation's source separation program. Close coordination between the IO and FE will be necessary to accomplish this.

J. Reports

A series of reports are prescribed by the Guideline which must be prepared by the Army and submitted in accordance with the DoD Directive 2165.xx. The format and content of these reports are provided in Appendix C (Reporting Format). The following tabulation (Table V-1) summarizes these requirements and the submission schedule.

*When pickup service is provided by contract

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C W Lahser	ADCOM/DEVT	(A) 692-3708
Lt Col Church Watkins	ADCOM/DEV	(A) 692-3708
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Capt Felix T Uhlik III	HQ SAC/DEVQ, Offutt AFB NE 68113	(A) 271-2208
Lee C Bailey	HQ SAC/DEMG, Offutt AFB NE 68113	(A) 271-3664 or 271-4873
Ralph M Stanford	3800 ABW/DEE, Maxwell AFB AL 36112	(A) 293-6908
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AFSC/DLCAM Andrews AFB DC 20334	1
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MAC/DEE ATTN: Mr Wayne Caughman Scott AFB IL 62225	1
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15 ABW/DEEE ATTN: Mr Herbert Nakashima APO San Francisco 96274	1
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AFISC/SES Norton AFB CA 92409	1
AFRES/DEMM ATTN: Mr James Rachal Robins AFB GA 31098	1
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AFIT/DEM 1
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